STUDY OF AIRPOWER

UNIVERSITY
OF MICHIGAN

JUL 27 1956

MAIN
READING ROOM

HEARINGS

BEFORE THE

SUBCOMMITTEE ON THE AIR FORCE

OF THE

COMMITTEE ON ARMED SERVICES

UNITED STATES SENATE

EIGHTY-FOURTH CONGRESS

SECOND SESSION

AIRPOWER

JUNE 6, 7, AND 13, 1956

PART XII

Printed for the use of the Committee on Armed Services

UNITED STATES
GOVERNMENT PRINTING OFFICE
76922 WASHINGTON : 1956

COMMITTEE ON ARMED SERVICES

RICHARD B. RUSSELL, Georgia, *Chairman*

HARRY FLOOD BYRD, Virginia	LEVERETT SALTONSTALL, Massachusetts
LYNDON B. JOHNSON, Texas	STYLES BRIDGES, New Hampshire
ESTES KEFAUVER, Tennessee	RALPH E. FLANDERS, Vermont
JOHN STENNIS, Mississippi	MARGARET CHASE SMITH, Maine
STUART SYMINGTON, Missouri	FRANCIS CASE, South Dakota
HENRY M. JACKSON, Washington	JAMES H. DUFF, Pennsylvania
SAM J. ERVIN, JR., North Carolina	HERMAN WELKER, Idaho

THE SUBCOMMITTEE ON THE AIR FORCE OF THE COMMITTEE ON ARMED SERVICES

STUART SYMINGTON, Missouri, *Chairman*

HENRY M. JACKSON, Washington	LEVERETT SALTONSTALL, Massachusetts
SAM J. ERVIN, JR., North Carolina	JAMES H. DUFF, Pennsylvania

FOWLER HAMILTON, *General Counsel*
RAMSAY D. POTTS, JR., *Associate General Counsel*
EDWARD C. WELSH, *Staff Director*
WALLACE L. ENGLE, *Staff Member*
RONALD FRIEDENBERG, *Staff Member*
D. F. MCGILLICUDDY, JR., *Staff Member*

DEPOSITED BY THE
UNITED STATES OF AMERICA

CONTENTS

Testimony of—	Page
Vice Adm. Thomas S. Combs, Deputy Chief of Naval Operations (Air), Department of the Navy (resumed)	976
Vice Adm. R. E. Libby, Deputy Chief of Naval Operations for Fleet Operations and Readiness, Department of the Navy	1066
Accompanied by:	
Rear Adm. Rawson Bennett, Chief of Naval Research, Department of the Navy	1070
Rear Adm. Armand M. Morgan, Assistant Chief, Bureau of Ships for Ship Design and Research, Department of the Navy	1076
Rear Adm. W. A. Schoech, Assistant Chief of the Bureau of Aeronautics for Research and Development, Department of the Navy	1078
Capt. E. B. Hooper, Assistant Chief of the Bureau of Ordnance for Research, Department of the Navy	1083
Rear Adm. C. D. Griffin, Office of Chief of Naval Operations, Department of the Navy	1054
Rear Adm. S. S. Russell, Chief of Bureau of Aeronautics, Department of the Navy	1059
Capt. David L. Martineau, Office of Liaison, Bureau of Personnel, Department of the Navy	1040

NOTE.—Throughout the text, topic headings have been inserted to facilitate reference. These topic headings are not part of the testimony per se.

STUDY OF AIRPOWER

WEDNESDAY, JUNE 6, 1956

UNITED STATES SENATE,
SUBCOMMITTEE ON THE AIR FORCE
OF THE COMMITTEE ON ARMED SERVICES,
Washington, D. C.

The subcommittee (consisting of Senators Symington, Jackson, Ervin, Saltonstall, and Duff) met, pursuant to recess, at 10:05 a. m., in room 212, Senate Office Building, Senator Stuart Symington (chairman of the subcommittee) presiding.

Present: Senators Symington, Jackson, and Duff.

Also present: Fowler Hamilton, general counsel; Ramsay D. Potts, Jr., associate general counsel; Fred B. Rhodes, legal consultant to Senator Saltonstall; Edward C. Welsh, assistant to Senator Symington; and Wallace L. Engle, staff member.

[The closed session testimony was censored by the Department of Defense for security reasons.

Those portions of the record affected by this censorship are indicated by the symbol Ⓓ.]

Brig. Gen. Ronald D. Salmon, USMC, Assistant Director, Division of Marine Aviation, Office of Chief of Naval Operations; Comdr. E. A. Luehman, Comdr. J. F. Schremp, Captain Dawson, Capt. E. C. Outlaw, Commander Russell, Comdr. T. R. Ingham, Commander MacGregor, Capt. J. S. McCain, Captain Robertson, Capt. F. Massey, Comdr. J. S. Elkins, Comdr. M. E. Haller, Rear Adm. J. S. Russell, Comdr. W. W. Suydam, Comdr. M. F. Weisner, Comdr. R. E. Warner, Comdr. R. D. Macklin, Capt. S. R. Brown, Rear Admiral Griffin, Vice Admiral Combs, Capt. T. F. Connolly, Capt. S. S. Searcy, Capt. F. A. McKee; S3c. J. G. Muchek; Brig. Gen. Thomas C. Musgrave, Jr., United States Air Force; Col. Donald S. Bussey, ODCSOPS, Department of the Army; Clarke A. Morgan, OSD Security Office; Bernard S. Bogdanowicz, OSD, Security Office.

Senator SYMINGTON. We will now call to order the hearing this morning of the Subcommittee on the Air Force of the Senate Armed Services Committee.

Admiral Combs, we welcome you back.

Is there any witness that is going to testify this morning who has not been sworn?

Admiral COMBS. I have two officers, sir, who may be called upon for specialties and who have not been sworn, Mr. Chairman.

Senator SYMINGTON. Will you have them stand and identify themselves?

Admiral COMBS. Captain Warner and Commander Ingham.

Senator SYMINGTON. Will you raise your right hands, gentlemen?

Do you solemnly swear to this subcommittee of the Senate Armed Services Committee you will tell the truth, the whole truth, and nothing but the truth, so help you God?

Captain WARNER. I do.

Commander INGHAM. I do.

Senator SYMINGTON. Admiral, will you and the other witnesses consider yourselves sworn?

Admiral COMBS. Yes, sir.

Mr. HAMILTON. As I understand, Admiral Combs has something further to give us with respect to the matters he was discussing last Friday.

TESTIMONY OF VICE ADM. THOMAS S. COMBS, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR) UNITED STATES NAVY—Resumed

Senator SYMINGTON. Will you proceed, Admiral?

Admiral COMBS. Mr. Chairman, I have a short statement on Navy and Marine airlift which I will present as follows:

The Navy and Marine Corps have peacetime requirements for airlift. However, as for all things military, wartime situations and requirements must be predominant and controlling in considering air transportation matters.

In discussing Navy and Marine Corps air transportation therefore, I shall emphasize wartime aspects.

WARTIME AIRLIFT REQUIREMENTS

The wartime airlift requirements of the Navy and Marine Corps may be separated into two general categories.

AIRLIFT FROM OTHER SUPPLIERS

In the first category are those requirements which can be fulfilled satisfactorily by a common general service. Those requirements which fall into the first category are services provided by common carriers including the military air transport service and commercial operators. The common carriers by definition and intent provide service which meets the general requirements of different users along established terminals in accordance with fixed and reliable schedules to give the maximum service and to attain the most effective utilization of equipment. High load factors are necessary. In addition the availability of MATS service is dependent upon allocations made some considerable time in advance. This means that a backlog is essential to efficiency.

It likewise means a service which, while fast, is less than optimum for speed. It is frequently incomplete because it is limited in points served. Since it is general, it is not suitable for special or peculiar needs.

The common services available through MATS and the civil reserve air fleet in wartime will fill a large part of the requirements of the Navy and the Marine Corps for routine channelized resupply.

ORGANIC AIRLIFT

However, there are many requirements which, for one reason or another, fall into the second category and which cannot be satisfactorily accomplished by common carriers. These are:

Supplemental airlift, that is the feeder service: General airlift to points not served by the common carrier. Special, immediate and unpredictable airlift for critical material or personnel required by the fleet or Fleet Marine Force commanders: Airlift which involves special techniques or equipment not possessed by the common carrier.

Airlift of a tactical or close support nature.

Examples of the foregoing are: Special resupply of critical ordnance, including pickup and distribution of atomic weapons in support of war plans.

Tactical airlift of Marine assault forces and support of Marine ground and aviation combat forces.

Seaplane support for combat seaplanes, surface forces, submarines and seaplane delivery of assault forces.

On-board delivery to aircraft carriers.

Shore-to-ship and ship-to-ship helicopter delivery.

Augmentation and replacement of personnel and evacuation of casualties from units or places not served by MATS.

Emergency supply of essential parts and equipment to deployed forces: The airlift requirements of this second category, which derive from tasks imposed on fleet and Marine commanders by approved war and emergency plans, necessitate the existence and readiness of organic air transport units as integral components of Navy and Marine commands. The lift provided must be directly responsive to the needs of the commanders.

Such forces are specifically provided for by the National Security Act of 1947 which states that "Naval aviation shall consist of combat and service and training forces and shall include air transport essential for naval operations," and "the Marine Corps shall be organized, trained, and equipped to provide fleet marine forces of combined arms together with supporting air components."

These organic forces are the Navy fleet logistic air wings, and the Marine Corps assault transport squadrons.

There are two Flogwings, under the direct operational control of the commander in chief, Atlantic, and commander in chief, Pacific fleets, respectively.

In peacetime they are continuously engaged in training and support operations closely related to the operational needs of the mobile fleets and deployed forces.

The Marine assault airtra nsport squadrons have been covered in more detail in a separate presentation by General Salmon. The size and composition of the Navy and Marine organic air transport forces should be such as to meet the organic airlift requirements on D-day and the critical days immediately thereafter.

AIRLIFT COMPROMISE

However, as for all military requirements, the attainable represents a compromise between the desirable and the possible.

Although the sizes and compositions of these air transport forces are relatively small, the Navy and the Marine Corps must in peace-

time expend funds and provide personnel from austere resources to insure a dependable wartime airlift capability.

NINETY-ONE AIRCRAFT IN FLEET LOGISTIC SUPPLY

This slide shows the transport aircraft presently assigned to Navy and Marine air transport squadrons.

In the fleet logistic air wing we have a total of 91 aircraft, composed of 4-engine land planes, 4-engine seaplanes, 2-engine land planes, and 2-engine carrier-delivery planes. (D)

Mr. HAMILTON. For the record, what are the carrier delivery planes?

Admiral COMBS. Those are the transport version of the Navy Grumman S2F which we showed the other day as being used for antisubmarine warfare. These planes will pick up mail on the beach at a field, pick up passengers, pick up spare parts and deliver them to the decks of the carriers.

The pilots are qualified to land on board the carriers. The planes are equipped with the arresting hooks and all the equipment necessary so that they can do this. It makes a very flexible working arrangement whereby we can get people and things quickly from the beach to the fleet or from the fleet to the beach.

Senator SYMINGTON. Are there any questions you would like to ask?

Senator DUFF. No, sir.

TYPES OF PLANES

Senator SYMINGTON. Four-engine land planes, what are they? (D)

Admiral COMBS. We have a breakdown of that, sir, I can supply for the record, but in general they are four-engine R5D's, which the Air Force calls the C–54, and we have Constellations, the C–118's, C–54's and a few of the——

Senator SYMINGTON. Constellation is the C–121, isn't it?

Captain ROBERTSON. We don't have any Constellations any more, sir.

Senator SYMINGTON. Then what is the C–118?

You said C–118. I thought Admiral Combs said it was a Constellation.

Captain ROBERTSON. No, sir, I am sorry, the R6D is the C–118 or DC–6.

Admiral COMBS. The Navy aircraft in MATS contain the Constellations.

Senator SYMINGTON. Let's go back to the first question.

How many of the four-engine land planes, which comprise approximately half of the fleet logistic air wing, are the nonpressurized old C–54, DC–4 types? (D)

Captain ROBERTSON. Fourteen, sir; fourteen R5D, C–54.

Senator SYMINGTON. And what are the others? (D)

Captain ROBERTSON. Those are the R6D, DC–6.

Senator SYMINGTON. So you have 14 of the DC–4's and the rest are DC–6's; is that right? (D)

Captain ROBERTSON. Yes, sir.

Senator SYMINGTON. What is the four-engine seaplane?

Admiral COMBS. Those are the R3Y Consolidated, large 4-engine seaplane, turbo-prop, Allison turbo-propeller engines, and we have how many Mars—3?

Captain ROBERTSON. They are being phased out.

Senator SYMINGTON. Will you supply the complete details on this breakdown for the record at this point?

Admiral COMBS. Yes, sir.

(The information requested has been supplied to the committee in classified form.)

Senator SYMINGTON. We won't ask further questions on that.

Admiral COMBS. The Marine air transport squadrons consist of 2-engine land planes, and 4-engine land planes. (D)

We can give the breakdown on that too, sir.

The Navy aircraft in MATS are 4-engine land planes divided about equally between R6D's and C–121's, the Constellation, the big Constellation transport. (D)

Senator SYMINGTON. In other words, in MATS you have no C–54's, no DC–4's? Is that right?

Admiral COMBS. That is correct. (D)

Senator SYMINGTON. I think that clears it up. Thank you.

QUALITY AND QUANTITY IMPROVEMENTS NEEDED

Admiral COMBS. The transport airplanes in MATS are a permanent part of that organization, and like all MATS aircraft are used for common service to all military services. The seaplanes in Flogwings are the R3Y Convair aircraft, delivery of which commenced this spring and will be completed this summer. (D)

Extensive training, shakedown and operational development of this airplane and new equipment and facilities associated with it will be necessary before it becomes operational in the logistics sense.

Some of the aircraft in the Flogwings and Marine units are obsolescent and need replacement. We are engaged in determining the proper replacements at this time. The Department of the Navy is currently reviewing its wartime and peacetime airlift requirements as to nature and quantity of services needed. This review is being made in the light of the increased military and economic advantages to be gained by broader use of air transport and increased awareness of the vital importance of maximizing the effectiveness of combat forces in being in the first days of an atomic war.

We anticipate that this review will indicate increased requirements for MATS and need for increased capability of organic, naval and Marine air transport both in characteristics and numbers of aircraft.

That concludes my airlift presentation, Mr. Chairman.

Senator SYMINGTON. Thank you, Admiral.

Is that all the presentations now you have?

Admiral COMBS. That is all in my immediate cognizance here.

We have further ones, the research and development.

Mr. HAMILTON. A few questions on this last briefing if I may ask them at this time, Mr. Chairman.

Admiral, I wonder if you could state for the record some illustrations of the types of increased military and economic advantages to which you refer on the last page of your statement.

SPEED CALLS FOR AIRLIFT

It is in the second sentence of the next to the last paragraph.

Maybe I can read it to you.

You stated:

> This review will be made in the light of the increased military and economic advantages to be gained by broader use of air transport and increased awareness of the vital importance of maximizing the effectiveness of combat forces in being in the first days of an atomic war.

Admiral COMBS. One area is in the supply of spare part to the users in distant places; particularly in the Navy we have very long supply lines.

Our spare parts pipeline, if we fill it up by the transport of things, all things on ships, means that in that pipeline we have a great number of expensive parts going constantly from where they are made through the pipeline to the user. If we can decrease the time that it takes that pipeline to get a part from where it is made to the user, it means that we do not have to spend the money to have so many of those parts in the pipeline.

In other words, it is an economical advantage to use airlift wherever possible to decrease the time in transit of things.

Mr. HAMILTON. Thank you.

Admiral COMBS. That is the main reason for this.

Mr. HAMILTON. Thank you very much sir.

Then on the third page of your statement I wondered if, by the next to the last paragraph, you intended to give the impression, which was the impression that I got, that your present airlift resources were less than your present organic airlift requirements, but were what you described as attainable.

PRESENT AIRLIFT INSUFFICIENT FOR WAR NEEDS

I just wondered if that was the impression you intended that paragraph to convey.

Admiral COMBS. What I meant to convey, sir, was that the present airlift which we have is not the amount of airlift which we would need at the start of a war. We would have to get many things quickly from one place to another.

But as to all the services, we cannot hope to have everything standing by in peacetime so that it would quickly be available in war. We try to get as much of this equipment in the way of aircraft and people to carry the things as we can afford to do, which is a compromise between our peacetime and our wartime requirements.

That was what I was trying to convey.

Senator SYMINGTON. Will the counsel yield?

Mr. HAMILTON. Yes, sir.

Senator SYMINGTON. As I understand it, you do not feel that in peacetime you should have what you need in wartime, is that right?

Admiral COMBS. I think I would say, sir, that we feel that in certain categories of things, we cannot have all we need in wartime.

Senator SYMINGTON. Is that because you think that the next war will be a slow war with a long buildup and that you won't need to be ready for it?

Admiral COMBS. No, sir. I think the next war possibly will be a long war, but I think it will start out with pretty quick impetus when it does start.

Senator SYMINGTON. The other services have testified that they feel that they should be ready when, as they put it, "the balloon goes up."

Are you testifying that you do not need, when the balloon goes up, what you will need after the balloon goes up?

STRESSES "STABLE ECONOMY" RELATION TO DEFENSE NEEDS

Admiral COMBS. In many categories, sir, we will need in peacetime what we will need when the balloon goes up.

Senator SYMINGTON. But you do not think that in the case of airpower, you will need that when the balloon goes up?

Admiral COMBS. I think we will get as much as we can.

Senator SYMINGTON. What does that mean?

Admiral COMBS. I mean, sir, that we have a certain economy in this country, and we in the Navy will have our amount of funds provided to us to keep the economy stable.

Senator SYMINGTON. In other words, because of the amount of funds you have provided to keep the economy stable, you are willing to say that you do not believe you should have now what you think you will need if the war starts; is that right?

Admiral COMBS. I say, sir, that I believe we should have it, but I don't think it is physically possible to have it.

Senator SYMINGTON. You don't think it is physically possible?

Admiral COMBS. Well, I don't think that the word "physically"——

Senator SYMINGTON. Let me rephrase my question.

By "physically possible" do you mean you do not think that the planes could be produced with the production capacity?

Admiral COMBS. That is the wrong word. I should not have used "physically possible". I mean it is not economically possible.

Senator SYMINGTON. Economically possible?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. Why not economically possible, Admiral?

Admiral COMBS. Well, as I said a moment ago, sir, it is my belief that the economy of the country must first be kept stable. With that stability maintained, I feel that a certain amount of money, which is determined on levels much higher than mine, should be spent for defense.

I feel that our share, the Navy's share of that amount of money for defense, cannot always give us the things which a military man himself feels in time of war he should have or should have to begin a war.

If we had unlimited amounts of money to spend, there are many things that I as a military man——

(Senator Jackson entered the hearing room.)

Senator SYMINGTON. Just a minute.

I am not talking about unlimited funds. As I understand it, first you say you do not feel that in this field of the Navy's requirements, you should have what you will need in time of war.

Secondly, you say that the reason you should not have it is because it might affect the economy and you think a stable economy is vital, is that right?

Admiral COMBS. I would like to suggest, sir, that the meaning be changed from the amount of money which we can have, instead of what your phrasing there indicated, that I thought that we did not want all of that. I don't believe I meant to say that.

Senator SYMINGTON. Well, you said something about military people——

Admiral COMBS. I am talking about what we think we can get.

Senator SYMINGTON (continuing). Military people cannot have all they want, Admiral Combs; is that because you think they ask for more than they should have?

Admiral COMBS. All they require, think they want.

Senator SYMINGTON. Is that because you think they ask for more than they should have?

Admiral COMBS. No, sir. I think that the military always feel that they should have a plenty of everything to fight a war with. That, I think, is historical, and what I am trying to say, sir, is that with the feeling that we never have enough, we cannot always have that because we must keep a stable economy.

DEFENSE NEEDS VERSUS OTHER FACTORS

Senator SYMINGTON. I won't say that the Navy is the best logistic service, but I go on the record there is not any better.

Have you made a study of the economy so that you believe if you got what you say you need it would hurt the economy.

Admiral COMBS. No, sir; I have not made that study.

Other people have made that study.

Senator SYMINGTON. These hearings are so that any officer can state his opinion under oath to this committee, what he thinks is best for the security of his country. It is with that premise I am asking these questions.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. My impression was you felt that if the Navy got what it said it needed, that would be at the expense of creating an unbalanced economy. I was wrong in that, was I?

Admiral COMBS. I think when you take into consideration the needs of all of the military, that it probably would do that; yes, sir.

Senator SYMINGTON. The other services testified to their position; and now you are testifying to yours?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. What you are really saying is, as I understand it, that what the Navy is asking for is justifiable based on world conditions, but is being prevented because of the control of funds above Navy decision. Is that right?

Admiral COMBS. I think the record will indicate, sir, that in the beginning when we put in our requests for funds to bring before the Congress, the Navy puts in requests for many things that it needs, disregarding the economy of the country.

Those needs are based upon the military man's thinking of what he needs in the way of doing his job, not considering any outside elements or any controls.

Those needs are submitted to higher authority.

Now higher authority having the overall picture that we as one of 3 or 4 services do not have, must then decide, of the requests that we ask for, what we may expect to receive, bearing in mind at that level the economy of the country.

Senator SYMINGTON. As I understand it, you said that perhaps the Navy's requirements would not interfere with the economy, but you were afraid, if you added the Navy's requirements to the other two services, that that might interfere with the economy; is that correct?

Admiral COMBS. I think sir, that when we talk about this subject, we cannot just simply think of the Navy's requirements alone. I think we must take our requirements and combine them with the requirements of the other military services, so that at that point a decision can be made, which is above my level, as I said a little bit ago, as to just what part of those can be met and still maintain the economy of the country.

Senator SYMINGTON. As I understand it from your previous testimony, you feel that whatever the problem of the Navy's requirements as against the capacity of the economy, in effect we are talking about a problem created by the other two services along with the Navy. Is that right?

In other words, that the three together might be something that would——

Admiral COMBS. The three together make up the amounts that the country must allocate to the military.

I am talking of all the services.

Senator SYMINGTON. Your testimony does not follow that of the other two services. They have said frankly that they felt they needed more. They have not said they should not have more because of the economic situation.

EISENHOWER ON UNIFICATION

In 1945 the present Commander in Chief, President Eisenhower, said that if we had true unification of the services, we could cut 25 percent of the people out of the services. That is on the record. At this point I will supply the quotation for the record.

(The quotation referred to was subsequently read into the record.)

Senator SYMINGTON. On that basis, on the basis of reducing roughly 3 million people 25 percent, you would save billions of dollars a year.

Do you feel that if you had more integration of the services into what he called true unification, you could get what you need without at the same time affecting the stability of the economy?

Admiral COMBS. No, sir, I don't think so in peacetime.

Senator SYMINGTON. In peacetime?

Admiral COMBS. No, sir.

Senator SYMINGTON. So you think we just have to ride along the way we are, hoping we have enough, or can make enough quick enough after the gong rings. Is that right?

Admiral COMBS. I think we have to go along with as much as we can have, trying at all times and continuing to effect further and further economies, get better and better utilization of our weapons, better and better utilization of our personnel, which is one of the greatest factors we have in our shortages.

I am not prepared to say that I think further unification of the services would permit us, with the same ceilings, to have more materials in preparation.

Senator SYMINGTON. Now later in 1952 the present Commander in Chief said that under the Unification Act, duplication turned into triplication. For the record, I want the quotes to be put in the record here from a talk made by him in Baltimore on September 25, 1952.

(The quotation referred to was subsequently read into the record.)

Senator SYMINGTON. If we could eliminate the triplication he re-

ferred to—I don't know exactly what was being referred to but if we can eliminate any triplication—through closer integration of the services that would help this problem of getting what is necessary without having it at the expense of the economy, would it not?

Admiral COMBS. If a reduction such as you have mentioned could be effective, and I am not prepared to comment on that, sir, because I have not been a party to any study of what you mention, if such a saving could be made in people, in facilities perhaps, then it would follow that we would get more money for other things, still as I said before, working under the same ceiling.

QUESTION OF THE NAVY'S BEING SATISFIED

Senator SYMINGTON. I don't want to take too much of the committee's time but my point is this: I have great respect for you and your officers who come before this committee; but surely this amount of lift does not look like much lift in this age of airpower.

The Army has testified it has not enough lift to handle its mission properly. We arranged these hearings so that if you felt you needed more, say airlift, you could give your frank opinion without any possibility of criticism.

If you say you have enough for peacetime, but not enough for wartime, and are satisfied with the Navy's position because you are afraid you might hurt the stability of the economy, then you reach some sort of an impasse. Speaking at least for the Chair, the committee desires to give the Navy what is necessary to defend this country in this nuclear age.

I am one who believes you can have what is necessary without affecting the economy if you do it right. I am not saying here that it is not being done right. That is not the point at this time. But we can afford the security we need. In my opinion, if there is any future all-out war, this country, instead of being the last country to be attacked, as in the past, will be the first country to be attacked. Those are the reasons for these questions.

I thank you, Admiral.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. Senator Jackson, would you like to ask any questions at this time?

I have asked Senator Duff and the counsel and I will go around again.

Senator JACKSON. Yes.

CONGRESS AUTHORITY AND RESPONSIBILITY

Admiral, under article I, section 8 of the Constitution it states that Congress shall have the power among other things to provide for the common defense, and then on down it says "to raise and support Armies," then a specific provision "to provide and maintain a Navy."

You are familiar of course with those provisions?

Admiral COMBS. Yes, sir.

Senator JACKSON. If you were sitting over on this side of the table, wouldn't you feel that it is the clear duty and the clear responsibility of a Member of the House and Senate, especially serving on one of the committees related directly to the constitutional provision I just

referred to, to obtain from the military their honest, professional advice?

Admiral COMBS. Yes, sir.

Senator JACKSON. You agree on that?

Admiral COMBS. Yes, sir.

RESPONSIBILITY OF MILITARY TO GIVE CONGRESS THEIR BEST JUDGMENT

Senator JACKSON. Do you feel therefore that it is the duty of the military to provide that advice?

Admiral COMBS. Yes, sir.

Senator JACKSON. Without any inhibitions.

In other words, you are a military man, you are not an economist. Isn't it your responsibility and your duty to give the military advice and let Congress determine, after they have received that advice from all of the top professional military experts, whether they want to accept the advice, reject it, or revise it?

Admiral COMBS. That is right, yes, sir. You have that authority.

Senator JACKSON. In other words, we cannot discharge our responsibility unless we can get intellectually honest recommendations from people who are the experts, right?

Admiral COMBS. Yes, sir.

Senator JACKSON. Therefore, you have a duty under the Constitution to provide to the President, who is the Commander-in-Chief, and to the Congress, without any inhibition, what, in your honest, sincere judgment, you deem to be the best military advice you can give.

Do you agree with that?

Admiral COMBS. Yes, sir.

Senator JACKSON. I emphasize this just to clarify the record. I am sure that is what you had in mind?

Admiral COMBS. Yes, sir.

Senator JACKSON. In other words, I realize that you think of all these other things. But we have a right to full information in Congress, just as much as the President and perhaps more so. For the President, while he directs the force in being as Commander in Chief, cannot even have a force in being unless we appropriate the funds each year. Do you agree?

Admiral COMBS. I agree; yes, sir.

Senator JACKSON. So that neither the President nor the Congress has all wisdom. Sometimes the President is more right than Congress, and I have seen it work both ways.

As I view our responsibility up here, it is to get from you folks what you think is best, regardless of what the cost may be. Then, after getting all this information, we decide just like a jury—you know you don't always have to be an expert to make a decision. Unless we do get this advice, we cannot discharge our constitutional responsibility.

So I believe the Navy, the Army, and the Air Force ought to come up and say "Here is what we need."

I would not worry about possibly scaring somebody. I heard people say 3 months before Korea that $15 billion was the maximum we could spend or we would go broke.

It was not long before we were spending a lot more than that, is that right?

Admiral COMBS. Yes, sir.

Senator JACKSON. So I am not too sure about these experts. We get some bad advice sometimes from otherwise competent people. I just do hope that we will get the uninhibited answer to what are the requirements of the Navy. If we get that, we are in a better position to try to discharge our constitutional responsibility.

With that background do you believe in this general philosophy of a need for a force in being? In this nuclear age don't you believe that time and space, which have been the bulwark of our defense in the past, are no longer our bulwark of defense?

Admiral COMBS. That is right.

AS TIME FACTOR SHRINKS, COMBAT READINESS MORE IMPORTANT

Senator JACKSON. We don't have the time as we did in World War I and World War II to rearm our country, for example. If we assume we have that time, we are taking a terrible gamble; aren't we?

Admiral COMBS. Yes, sir.

Senator JACKSON. We don't have space on our side as we have had in the past. Distance has shrunk.

Do you agree to that?

Admiral COMBS. Yes, sir.

Senator JACKSON. And we have limited our ground forces, have we not? Since Korea we have cut them back?

Admiral COMBS. Yes, sir.

Senator JACKSON. Now if we have a peripheral war, isn't it very important that we get our ground forces to the point of contact along with other forces as soon as possible, in order to maximize the ground forces in being. In this case we are speaking of the responsibility of the Marine Corps. Do you agree with that?

Admiral COMBS. Yes, sir.

Senator JACKSON. In other words, if your forces land 2 weeks late, why you may have lost a big chunk of real estate that will take a lot of lives to recapture, isn't that right?

Admiral COMBS. Yes, sir.

Senator JACKSON. So, if you are going to cut back ground forces, it becomes urgent to get the maximum utilization of those forces. This requires being able to move them to the point of defense, wherever it might be in the world, as rapidly as possible.

Do you feel that you have reached the point, as far as the Marine Corps is concerned, where you can move forces to these trouble spots within the minimum period that you should be able to move them?

Admiral COMBS. I agree with you on this force in being principle. As you know, sir, the Navy has operated on that force in being principle all along. That is why we have our fleets deployed, our Sixth Fleet in the Mediterranean and the Seventh Fleet over there.

We have not suffered a reduction in our Marines, in our divisions of Marines.

CONGRESSIONAL ACTION NOT FOLLOWED IN MARINE FORCE

Senator JACKSON. Well, we passed funds for 215,000 Marines. I think we ended up with only 205. We did not get what we thought we should have. Don't we have about 205,000?

General SALMON. 205 is right, sir.

Admiral COMBS. But there is one point I would like to make.

Senator SYMINGTON. Excuse me, Admiral.

Just for the record, the Senator asked you if you thought that you had enough Marine airlift in order to move quickly in case of trouble, and properly, the Marine Corps.

Would you answer the question?

Admiral COMBS. That is what I am coming to, sir.

Senator SYMINGTON. I beg your pardon, I thought your answer was on a different subject and I did not know you were going back.

QUESTION OF MARINE AIRLIFT

Admiral COMBS. No, sir, I started out on the forces in being, and now I am coming to the Marines and the requirements for lift of the Marines.

When we put the Marines ashore somewhere, the Marines and we, and the whole country, expect them to be able to go ashore and to fight and to carry out a successful landing.

Those Marines in doing that, sir, need a lot of equipment which at the present state of the art cannot possibly be carried in aircraft.

For their amphibious landings they need heavy tanks, they need a lot of equipment which cannot be carried at the present time in aircraft in sufficient numbers to get to the place where a landing would be made.

Additionally if they land in the places most suitable for a landing, in all probability there will not be any airfields available for operation at that point, so we have contended, and continue to contend, that when we take a force overseas for assault, fighting battles, they must have all of their equipment with them and must be prepared under cover of air to land in force and to land successfully.

I think that will answer your question for a Marine division lift and for the large landing forces.

We have capabilities for taking small forces quickly by air from one place, forces of marines quickly from one place to another.

But those people I would like to point out are not prepared to carry on a landing in force.

Senator JACKSON. How much can you move by air?

I realize you can move them without combat support. But suppose you want to provide a minimum amount of combat support, maybe 4 or 5 days, to be followed up later with more airlift support——

Admiral COMBS. May I have General Salmon answer that, sir?

General SALMON. That would depend somewhat on circumstances, but I will give you our estimate in classified form. (D)

Senator SYMINGTON. Will the Senator yield?

There was quite a bit of landing on the part of airborne troops, both Marine and Army, when the lift was not as capable as it is now to carry heavy equipment. That is true; is it not?

General SALMON. Yes.

Senator SYMINGTON. Do you believe the Marine Corps has enough lift to carry out its mission today?

General SALMON. Airlift?

Senator SYMINGTON. Yes.

General SALMON. I will have to answer that, Mr. Symington, in a different way. The Marine Corps is not now machined up to be airborne troops. They are landing troops, and due to the fact that they are planned for landing troops, they depend upon their seatail to fight.

They go in with a 30-day fighting capability.

So when we go into the conjecture of using marines in a pure airborne operation, we are sort of out of our business, and we would have to study why we are going there. (D)

Senator SYMINGTON. I understand it then, in effect the Marines and the fleet are together on any landing?

General SALMON. Yes, sir.

MARINE AIRLIFT NOT TOO IMPORTANT

Senator SYMINGTON. And therefore the question of lift is relatively unimportant, as compared to an airborne operation; is that right?

General SALMON. That is correct, sir.

Senator SYMINGTON. Thank you.

Senator Jackson?

Senator JACKSON. In other words, you don't have as a mission at this time a straight land operation?

General SALMON. No, sir.

Senator JACKSON. Your mission at the moment is limited to amphibious operations?

General SALMON. That is correct. Our land operations in that connection——

Senator JACKSON. Land operations follow from the amphibious landing, but you would only be sent into a theater where there was an immediate requirement for an amphibious operation?

General SALMON. Not necessarily, sir. That is what we are designed to do, but a Marine fighting division could be sent anywhere.

Senator JACKSON. That is why I am wondering if you don't have the flexibility to move as an airborne unit—I do not mean parachutists but I mean to land by air. You must have that mission too, don't you?

General SALMON. We would have that in conjunction with the defense of advance naval bases.

There is—a hypothetical example would be Port Lyautey, if something happened to Port Lyautey they would fly marines to protect the base.

Senator JACKSON. Marines were fighting in Korea not as an amphibious operation but as a straight landing operation.

General SALMON. We started as an amphibious assault.

Senator JACKSON. Weren't there some marines in action prior to that?

General SALMON. Yes, sir; engagement initially, the forerunner of a division.

Senator JACKSON. You feel that to carry out your present mission you have enough airlift because you are relying on sealift?

AUSTERE AIRLIFT SUFFICIENT

General SALMON. That is right, sir, on a very austere basis we have sufficient airlift for the job we would be called upon to just send troops.

Senator JACKSON. Don't you feel that you could utilize your force in being far more effectively if you had better air support, better airlift?

General SALMON. Air transport?

Senator JACKSON. Yes. I don't mean air support, I mean airlift, air transport.

General SALMON. Well, on that question we would probably get into duplication with the Army's airborne divisions which are designed to do that.

Senator JACKSON. You have an RCT out at Okinawa, don't you?

General SALMON. Yes, sir.

Senator JACKSON. If there is trouble in Laos, and if they want to get the ground forces in as rapidly as possible, why should not your people move by air?

General SALMON. They would without a doubt, sir.

Senator JACKSON. I don't see any duplication. The Marines usually take care of themselves in these situations.

General SALMON. In the position of pure air transportation, this becomes a joint operation.

Senator JACKSON. That is all, Mr. Chairman.

MORE FROM EISENHOWER ON UNIFICATION

Senator SYMINGTON. At this point I read into the record the quotes on unification mentioned as being given by the Commander in Chief, President Eisenhower.

On November 16, 1945, he said:

> We could develop a more efficient fighting force with unification with 75 percent of the men that you would have if you had separate forces. I am certain that almost any professional officer that has studied this thing would agree.

The 1952 quote referred to, also stated by the Commander in Chief, this time in Baltimore on the evening of September 25, reads as follows:

> Such unity as we have achieved is too much form and too little substance. We have continued with a loose way of operating that wastes time, money, and talent with equal generosity. With three services in place of the former two still going their separate ways and with an overall defense staff frequently unable to enforce corrective action, the end result has been not to remove duplication but to replace it with triplication. All this must be brought to as swift an end as possible. Neither our security nor our solvency can permit such a way of conducting the crucial business of national defense.

Admiral, those were the two quotes that I was referring to in our colloquy.

Now, in support of Senator Jackson's position, I also read from some testimony that was given by the then General Eisenhower at the time he was Chief of Staff of the Army, which was repeated before thee Senate Appropriations Committee on May 19, 1953. It read as follows:

> We have asked for these things—

this is his testimony—

We have asked for these things because from our point of view these are what we would like to have.

These are what we think we need. We will defend these same estimates in the Senate, but it is the responsibility of the Congress under the Constitution to determine what portion of the national economy can be assigned to the national defense. That is the responsibility that the Constitution places upon the Congress.

RIGHT TO OBTAIN FRANK OPINION FROM MILITARY

In further comment on Senator Jackson's question: If, as the then General Eisenhower said, that is the responsibility of the Congress, then we feel we have the right, especially when the hearings are set up this way, and are not just the usual declaration of the Pentagon party line before a committee, we have the right to ask your frank military opinion; this in order that we can report back to the full committee and the Congress exactly what it is the Navy believes it needs to carry out its mission.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. Senator Duff?

Senator DUFF. Mr. Chairman, I would like to ask the admiral a question or two.

CONDITIONED READINESS

I wonder, sir, if I am correct in epitomizing your testimony in coming to these conclusions, one, that you believe that it is the business of the Navy to be in the condition of readiness and efficiency as evidenced by the fact that you always have forward part of your carrier forces equipped with modern weapons, and two, that you believe that, by reason of the national economy, you cannot continuously maintain the Navy on a full wartime footing. (D)

Would that be a correct summation in a few words of the general intent of your testimony, sir?

Admiral COMBS. I believe it would; yes, sir.

Senator SYMINGTON. Mr. Counsel?

Mr. HAMILTON. I have only one question.

Admiral, did you intend by your responses to the questions the various members of the committee have asked you, to qualify or modify in any way your statement here with respect to the organic airlift requirements on D-day and the critical days immediately thereafter?

Senator SYMINGTON. Mr. Counsel, would you read into the record at this point to what part of the admiral's statement you are referring.

Mr. HAMILTON. Yes; I will read this:

REAFFIRMS COMPROMISE

The testimony to which I am referring is—

the size and composition of the Navy-Marine organic transport forces should be such as to meet the organic airlift requirements on D-day and the critical days immediately thereafter. However, as for all military requirements, the attainable represents a compromise between the desirable and the possible.

Although the sizes and compositions of these air transport forces are relatively small, the Navy and the Marine Corps must in peacetime expend funds and provide personnel from austere resources to insure a dependable, wartime airlift capability.

Admiral COMBS. That does not change; no, sir.

Mr. HAMILTON. Now we have general interrogation on the general briefing.

Senator SYMINGTON. Mr. Counsel, will you proceed.

Senator JACKSON. Could I go back to just one question or two on the airlift?

Senator SYMINGTON. Yes, indeed.

Senator JACKSON. Admiral, do you feel you have enough cargo planes?

TYPES OF PLANES FOR MARINE AIRLIFT

My recollection was you draw from the Navy's operation of MATS for your Marine lift.

Do you have enough cargo planes to do the job of getting the Marine Corps to the point of operation?

Admiral COMBS. Mr. Jackson, most of our planes again—and I can give you exactly the number—most of them are cargo planes now.

Senator JACKSON. What type of plane does the Navy use for cargo planes? Are they the Douglas?

Admiral COMBS. We use the Douglas and the Lockheed both.

Senator JACKSON. The Connies and the DC–6's?

Admiral COMBS. Yes, sir.

And we use the R5D's, which is the DC–5.

Senator JACKSON. DC–4?

Admiral COMBS. DC–4.

Senator JACKSON. That is a DC–4. Is that the R5D?

Admiral COMBS. R5D. Then we use the 2-engine Consolidated 340.

Senator JACKSON. That is a Convair?

Admiral COMBS. Which we call the R4Y.

That is a Convair; yes, sir.

Senator JACKSON. Do you have adequate maintenance personnel for those to support—

SERIOUS SHORTAGE OF PERSONNEL

Admiral COMBS. We are very austere in our personnel, not only in this operation but in the others, and that will be brought out further with our personnel presentation which follows mine. We have a personnel expert from the Bureau of Naval Personnel who will be here and will explain that portion, but we are plagued by a shortage of personnel; yes, sir.

Senator JACKSON. Do you feel that when you do utilize these planes for purposes of Marine Corps lift, that you would be carrying your maximum load?

Is there anything that you can do to increase your load aboard these planes that are available to you?

Admiral COMBS. I think we are utilizing a load-carrying capability to the maximum, sir.

Senator JACKSON. What about the utilization rate?

Admiral COMBS. The utilization rate, we are trying to increase all along.

Senator JACKSON. Can't you get more hours?

Admiral COMBS. We can get more hours. To do that we need more personnel.

Senator JACKSON. That is what I mean.

Admiral COMBS. Yes, sir.

Senator JACKSON. So that you could better marshall the aircraft that you now have, and maximize their potential, by a change in your personnel situation?

Admiral COMBS. By an improvement, by an augmentation of personnel; yes, sir.

Senator JACKSON. As I see this thing as a layman, first of all you have got your Marine Corps—a force in being. Given that force in being you ought to have all the support that you can get to make maximum use of it. If Marines land a week late, they have lost land that can be regained only with more loss of life. You believe in that concept, don't you, if, for example, we are in a peripheral war?

Admiral COMBS. If they land in a condition to be effective——

Senator JACKSON. We would not want to send them in unless combat support would be available to them. One would not want to drop soldiers with only a few rounds of ammunition.

But, as long as you have this force in being, it seems like poor economy not to support it to the maximum.

Admiral COMBS. That is right, but additionally——

Senator JACKSON. There is no use increasing the Marine Corps if you cannot utilize properly what you now have. There is no use increasing the airlift unless you have the personnel to support the lift?

USE AIRLIFT ONLY 5 HOURS PER DAY

Admiral COMBS. We need more personnel. I think our utility of the airlift is now about 5 hours, 5 hours per day.

Senator JACKSON. That is not very good?

Admiral COMBS. It is not good. We are trying to increase it to 6 hours per day now.

Senator JACKSON. You would increase your combat effectiveness?

Admiral COMBS. Overall the MATS and Flogwings are all attempting to get a 6-hour per day utilization.

Senator JACKSON. Would you indicate later, at least in the record what funds you need to bring that situation about, and what effect it would have on the overall utilization of the Marine Corps personnel?

Admiral COMBS. Yes, sir.

Senator JACKSON. From the standpoint of combat effectiveness. I think that would be very helpful.

Admiral COMBS. Yes.

Senator JACKSON. The effect that additional personnel would have in the lift.

(The information requested has been supplied to the committee in classified form.)

Admiral COMBS. Yes, sir.

Senator JACKSON. That is all, Mr. Chairman.

I just wanted to clarify that point. I did not finish it before.

Senator SYMINGTON. Mr. Counsel?

NAVY MISSION IS CONTROL OF THE SEAS

Mr. HAMILTON. Admiral, would it be correct to say that the primary role of the Navy is to maintain control of the seas?

Admiral COMBS. Yes, sir.

Mr. HAMILTON. And I believe you say somewhere in your statement in substance that your airpower is geared into your overall power, having that primary role in mind?

Admiral COMBS. Yes, sir.

Mr. HAMILTON. Now, turning to the fleet forces which are contained on page 3 of your printed and prepared statement, those are the fleet forces as of today?

Admiral COMBS. Yes, sir.

Mr. HAMILTON. How long have fleet forces been composed approximately in that fashion?

LITTLE CHANGE IN FLEET FORCES IN RECENT YEARS

Maybe I can get at it this way. Has there been a marked change in the composition of the fleet forces in the last 3 or 4 years?

Admiral COMBS. I do not believe there has; no, sir.

Mr. HAMILTON. I am aware that you plan to put in larger carriers.

Admiral COMBS. Yes.

Mr. HAMILTON. But speaking very generally as to the number of the various types of vessels and aircraft that you have there, has there been a marked change in that in the last 3 or 4 years?

Admiral COMBS. Some of those items are new. As we look down at the aircraft squadrons, the distant barrier, the contiguous barrier control and the continental air defense, those are new, but they are part of the general plan of protection of this country.

FIFTEEN ATTACK CARRIERS

Mr. HAMILTON. About how long would you say we have had 15 carriers in the fleet, 15 attack aircraft carriers?

Admiral GRIFFIN. It went up to 15 carriers in 1956. It was 14 prior to that.

Mr. HAMILTON. And how long had there been 14?

Admiral COMBS. About 5 or 6 years.

Admiral GRIFFIN. For a number of years prior to that.

Mr. HAMILTON. And as I recall it, you plan to maintain it at 15, except that you plan to replace certain of the carriers with larger and better carriers?

Admiral COMBS. Yes.

NINE ANTISUBMARINE CARRIERS

Mr. HAMILTON. What is the situation with respect to antisubmarine carriers?

How long have we had nine?

Admiral COMBS. We are just now moving up to nine, sir. That force has increased through the years.

Mr. HAMILTON. Is it planned substantially to alter the composition of the fleet force between now and say 1960, except with respect to the replacement of certain types of ships by better and improved ships?

Admiral COMBS. That is about all. The force as I see it, sir, will be just about level.

Mr. HAMILTON. Turning to page 5 of your statement, Admiral, which contains the facts with respect to the eastern Atlantic and

Mediterranean Fleet, which is now, as I understand it, in that area and has been there for some time; has it not——

Admiral COMBS. Yes.

NO NAVAL LAND BASES IN MEDITERRANEAN

Mr. HAMILTON. Where is that fleet based, the Sixth Fleet?

Admiral COMBS. Mr. Hamilton, for 13 months, 1954 to 1955, I was commander of the 6th Fleet. I had command over there in the Mediterranean. We have no bases in the Mediterranean. The ships of the fleet are all logistically supported from the United States.

Mr. HAMILTON. So there are no naval land bases in that area?

Admiral COMBS. There are no naval land bases as such in that area. We have an airfield at Port Lyautey.

Mr. HAMILTON. That is a land base?

Admiral COMBS. That is a naval air station which is occupied by the French.

Senator JACKSON. That is in northern Africa?

Admiral COMBS. Yes, sir; northwest Africa; but the fleet itself has no permanent base in the Mediterranean.

TURNABOUT OF FORCES

Mr. HAMILTON. Am I right in the impression I have that you may move one of your carriers from the Atlantic Fleet into the Mediterranean to replace another carrier from time to time?

Admiral COMBS. The whole force, sir, is replaced about every 4 to 5 months.

Mr. HAMILTON. But not simultaneously I take it, but by putting in a vessel or two at a time?

Admiral COMBS. Well, we put in divisions of destroyers or carrier divisions, but they are continually on the move.

We do not allow permanency over there.

Mr. HAMILTON. Turning to the two attack aircraft carriers, how many squadrons of each type of aircraft would one of those carriers have?

Would you care to illustrate it by the particular carriers that are there at the present time?

Admiral COMBS. May I do this by class?

Mr. HAMILTON. Yes. Could you just refer to the carriers that are there now?

TWO CARRIERS WITH PLANES IN MEDITERRANEAN

What are the 2 carriers that are in the Mediterranean now, the 2 attack carriers?

Admiral COMBS. We have 1 *Midway* class, the *Coral Sea*, and 1 *Essex* class, the *Intrepid*.

Mr. HAMILTON. The *Intrepid* and the *Coral Sea?*

Admiral COMBS. Yes, sir.

With respect to the *Coral Sea*, we have a total of 72 aircraft.

Mr. HAMILTON. On the *Coral Sea?*

Admiral COMBS. On the *Coral Sea*.

Mr. HAMILTON. Now on the *Intrepid*, that is changed a little bit.

Admiral COMBS. That is changed a little bit. The *Intrepid* is smaller than the *Coral Sea*. These consist of fighters and light and heavy attack planes. (D)

MISSIONS OF DIFFERENT TYPES OF CARRIER PLANES

Mr. HAMILTON. Now then, for what purposes in the event of war would the fighter planes be used?

Would they be used for the defense of the fleet?

Admiral COMBS. They could be used for the defense of the fleet. They could be used for support of the ground forces provided we were given that mission. You see, in the Mediterranean we have many things to do.

One of our missions is support of the ground battle.

Now the support of the ground battle would be very much as we handled it in Korea. The planes go in and they will fly, the fighters will fly cover for attack planes that go in and support the ground battle. And always we have our combat air patrol over our task force at all times.

That is for our protection.

Mr. HAMILTON. Then what would be the function of the light jet attack planes in the event of a sudden sneak attack by the Russians?

Admiral COMBS. Well, they would be to carry, certain numbers of them, to carry our attack to the enemy.

Mr. HAMILTON. And what kind of attacks would they be equipped to make where the *Coral Sea* is now?

Admiral COMBS. At the present time those light jet attack planes would do what we call this loft or toss bombing.

The heavy attack would do the high altitude bombing.

Mr. HAMILTON. Are they equipped for all-weather bombing, the light attack?

Admiral COMBS. The light attack are not fully equipped for all-weather bombing. They fly in all weather, but when they get to the target they must be able to see landmarks so that they can identify the point at which they start this loft bombing technique.

Mr. HAMILTON. And what is their combat radius approximately?

Admiral COMBS. We gave that the other day.

It varies. I have got it right here. In the attack aircraft——

Mr. HAMILTON. The light jet?

Admiral COMBS. The light attack aircraft that we have there now which consists of the AD and the F2H, the AD is the aircraft which goes nonrefueled to a distance of a thousand miles and return.

It does not require in-flight refueling.

Mr. HAMILTON. That is the light jet?

Admiral COMBS. That is the light propeller attack airplane for the loft bombing.

Mr. HAMILTON. It goes a thousand miles?

Admiral COMBS. A thousand miles. The F2H normal radius is 480 miles, but with in-flight refueling to carry a certain kind of a bomb, it will have a radius of 750 miles. (D)

SURPRISE ATTACK ON MEDITERRANEAN FLEET

Mr. HAMILTON. Assuming that the Russians made a sneak attack this morning, could you give the committee any indication as to what number of bombs could be dispatched from these two carriers, to what general territory?

Admiral COMBS. Yes, sir.

Now I must make several assumptions. I will make the assumption that the 6th Fleet is at sea.

Mr. HAMILTON. Well, where is it now? As of a matter of this morning?

Admiral COMBS. As of this morning? They are holding exercises right at the present time on their way from Crete to Sicily. Those are about the areas. I would say by this morning they might be just below the boot of Italy.

Senator SYMINGTON. Just below what?

Admiral COMBS. The boot of Italy.

Senator JACKSON. They are going westward?

Admiral COMBS. The toe of the boot. They are going westward, yes.

Mr. HAMILTON. Would you assume that the Russians would know this morning where the fleet was, assuming the Russians had decided 30 days ago to make an attack?

Would they know where the fleet was likely to be at about this time?

Admiral COMBS. I don't think they would know exactly. They would probably know the time they left Athens. You see, they don't all leave from the same port. They would know the time they left. They might have information on the time they are expected to be at their next port. I doubt very much if they would have any idea precisely where the fleet was.

They would certainly have to have reconnaissance aircraft to locate the fleet. (D)

Mr. HAMILTON. Would that be a serious problem of getting the message back?

Admiral COMBS. If we had any advance notice that an attack was imminent, it would be.

Mr. HAMILTON. I was assuming it was a sneak attack.

Admiral COMBS. A sneak attack? We would certainly have our combat air patrol over this fleet. We would certainly know when a strange craft came in our vicinity. We would certainly contact, and by that I mean we would vector our fighters out to this airplane as it came in and we would know whether that aircraft was a friendly aircraft whose markings we could see, he could give us his identification, or if it were not, I am sure that fellow would have a little trouble getting his message back.

Mr. HAMILTON. If he were shot down before he sent a message he obviously would not get it back?

Admiral COMBS. He would not get it back.

Mr. HAMILTON. Suppose he did get it back?

Admiral COMBS. Suppose he did get the message back? (D)

Mr. HAMILTON. Would it or would it not be the sensible assumption to make that if they were planning a sneak attack and knew the fleet was in the general area, that they would have their attacking planes on the alert?

Admiral COMBS. They probably would. (D)

Mr. HAMILTON. How many total light attack carriers would be available for attack—planes I mean.

Admiral COMBS. I would like to furnish that for the record. (D)

GREAT DISADVANTAGE FROM SURPRISE ATTACK

Admiral COMBS. Well, we still have to make assumptions that that man who told them where we are got his message through, and we did not know at that time that an attack was imminent. You see, we are at a disadvantage. The defender is at a disadvantage if somebody suddenly confronts him with an attack right there.

Mr. HAMILTON. Yes; I am sure of that; that is certainly obvious.

Admiral COMBS. You are at a great disadvantage.

Mr. HAMILTON. If somebody hits you from behind over the head?

Admiral COMBS. Yes, sir.

Mr. HAMILTON. And it might be that you would have tactical warning?

Admiral COMBS. I am sure that we would have some kind of warning. (D)

Senator SYMINGTON. Let me interrupt to ask one question.

The Poles did not have much warning about the Germans; and we did not have much warning about Pearl Harbor; and the American troops did not have much warning in Korea.

I bracket the three. Let me rephrase the question.

Isn't it true that these people who make a practice of attacking the United States in the last half century, they do not give us much warning generally, do they?

QUESTION OF INTELLIGENCE INFORMATION

Admiral COMBS. They do not give us much advertisement of warning, but if the intelligence people are alert, there are indications which you can pick up which would lead you to believe that their forces are out of their regular positions and they are probably out there for no good.

Senator SYMINGTON. Would you want to base your strategic concept on the basis of the success of your intelligence?

Admiral COMBS. No, sir; but it will certainly help.

Senator JACKSON. Mr. Chairman, just one question that is directly pertinent to this point.

Isn't it true, Admiral, that if they are going to make an all-out nuclear attack, the normal indications that you would have in past wars such as troop movements and so on would not necessarily apply?

Admiral COMBS. No, sir; troop movements——

Senator JACKSON. I mean would we get information in time?

SURPRISE ATTACK NOT EASY TO DETECT

Supposing the Soviet Union decides to make an all-out nuclear attack—wouldn't it be to their interests not to start moving troops around, since that would tip off an all-out nuclear attack. The obvious thing for them to do, if they want to capitalize on surprise, is to limit their movement to the redeployment of their SAC forces,

their long-range air arm. Our intelligence sources would not be able to get that information back in time to give us warning.

Admiral COMBS. I am thinking, sir, of that. I agree with you there.

Senator JACKSON. My point is the normal signs that we have had in the past would not necessarily apply in this type of warfare.

Admiral COMBS. I am thinking by stealth, however, they might do this. They might, inasmuch as they want not only to make this surprise attack but they want to follow it up, they might send a considerable number of their submarines out.

They go out by stealth, they would want to send a number of them out to be in certain locations at the time they did this sneak attack. It would certainly be to their great advantage, and they might feel that they could get those out and get them by stealth into certain positions, and that is why I say that we, our intelligence, might have some information that many of these submarines had all gone out at a certain time.

Now normally they don't do that. They naturally go out for exercises in small numbers.

Senator JACKSON. Of course they could pull off a lot of these maneuvers over a period of years. They could send a lot of submarines out and be crying "wolf" time and time again, and we would not know when the wolf was going to bite.

I don't know what their tactics are, but I have a hunch that if they are going to engage in an all-out atomic war they are not going to tip their hand by a 30-day movement of troops. To exploit the advantage of the atom I would think they would make the most of surprise.

The reason I mention this is that our previous witnesses feel that that is definitely the line of approach or attack that they would make. It makes a lot of commonsense. (D)

Admiral COMBS. Yes, sir. I think it does.

MISSION OF SUBMARINES TO KEEP UNITED STATES FLEET AWAY FROM SOVIET LAND

Senator JACKSON. But your point is that the Soviet Navy has an advantage there. They obviously have 400 submarines that could be used to keep the American fleet as far as possible away from the Soviet land mass.

Isn't that one of their primary missions?

Admiral COMBS. That is one of their missions.

Senator JACKSON. They are not so much after American cargo ships, as they are out to keep the American Navy as far from the land mass of the Soviet Union as possible. Would not that be the primary objective?

Admiral COMBS. That would be what they are for.

They are there for the same reasons that we are. They are there to hit the threat to their country, and that is what we are over there for, to hit the threat to our country. One of the greatest threats for us is the submarine, and it may be possible for our intelligence people, with their contacts, to know whether or not a great number of their more than 400 submarines suddenly are all at sea at the same time. (D)

Mr. HAMILTON. Presumably that would be the kind of question the Russians would have to weigh; whether the advantage of getting

them out would offset whatever element of surprise they would lose by having them out.

Admiral COMBS. Yes, sir. They are faced with the alternatives of prepositioning their submarines and thereby giving us advance warning, or keeping them at their bases where they are subject to attack by our retaliatory forces.

Mr. HAMILTON. Now turning back to that situation, Admiral, are the light jet attack planes also capable of operating as fighter defenses?

Admiral COMBS. Yes, sir; they can.

Mr. HAMILTON. Would you have any judgment as to how many planes the Russians could dispatch if they decided to make an attack of this kind to give fighter defense to any bombers that they might use in this hypothetical situation?

QUESTION OF FLEET STAYING OUT OF FIGHTER RANGE

Admiral COMBS. In this hypothetical situation which we have discussed here where our fleet is to the south of the toe of Italy, the fighters, unless they have something up their sleeve that we know nothing about, the fighters could not come out that far and get home and at the same time be able to protect a bomber force heading toward us.

At that point we are outside of the arc of any fighter which could get to us from the nearest fields to that position.

Mr. HAMILTON. And how far would our fleet be this morning, approximately, from those fields?

Admiral COMBS. From the nearest fields I would say they would be around 500 miles possibly.

Mr. HAMILTON. So we would be about 500 miles from the nearest fields.

Senator SYMINGTON. Assuming that one or more of the countries on the European coast of the Mediterranean joined the Soviet group, what would the distance be then?

Admiral COMBS. It would be a shorter distance. How much shorter would depend upon which country made that move. (D)

IMPORTANCE OF ITALY TO MEDITERRANEAN FLEET

Senator SYMINGTON. Admiral, could I ask an overall question there?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. It is therefore vital, is it not, based on your testimony, that Italy remain in the free world if we are going to have carrier activity in the Mediterranean?

Admiral COMBS. That is correct, sir. (D)

SOVIET AIRCRAFT

Senator SYMINGTON. You have a chart here that you would like to show the committee with respect to fighter aircraft?

Admiral RUSSELL. You asked the radius of the Russian fighters, sir, I believe. Here is the Farmer; here is the Flashlight, their all-weather fighter.

These are the radii in nautical miles, and I have plotted, just to separate the thing, the gross weight in thousands of pounds. (D)

Senator SYMINGTON. Have you plotted the IL 28's on there?

Admiral Russell. Yes, sir. Here is the Badger, the one that would be the most probable fellow, and his radius is well in excess of 1,000 miles. That is the twin jet. (D)

Senator Symington. And how about the IL 28? We have heard they have more than 5,000 of the IL 28's, their subsonic light jet bombers, but within 3 years they will reduce that to 3,500 as a result of replacements of a better bomber. (D)

Admiral Russell. Yes, sir.

Senator Symington. As I remember it, their radius has been estimated at about half that of the Badger. Is that correct? (D)

Admiral Russell. That is the way I recall it. I have the estimates here. (D)

UNITED STATES HAS THOUSANDS LESS LIGHT JET BOMBERS

Senator Symington. One of the things that I think is the most unfortunate that this committee has found out so far is that the combined production of light jet bombers by the Navy and Air Force is thousands less than the production of those bombers by the Communists. (D)

That is one that is hard for me to digest.

Admiral Combs. Did I understand you to say, sir, it was in the light bomber category?

Senator Symington. Yes, IL 28 light bomber. (D)

CARRIER ATTACK AIRCRAFT

Mr. Hamilton. Now, then, turning to the heavy attack aircraft that we would have available from the Coral Sea and the Intrepid—are they propeller aircraft? (D)

Admiral Combs. They are propeller and jet aircraft.

The AJ, which we saw on the screen here the other day—I will give you their performance in just a minute.

Mr. Hamilton. That has a range of a thousand nautical miles?

Admiral Combs. A thousand nautical miles. (D)

Mr. Hamilton. So that there would be heavy attack aircraft and light jet attack aircraft having a radius unrefueled of 480 miles. (D)

Admiral Combs. Yes, sir.

Mr. Hamilton. And the propeller attack aircraft having a radius of a thousand miles? (D)

NAVY TARGETS ASSIGNED

Admiral Combs. That is right.

Mr. Hamilton. Those would be the aircraft that would be available this morning in the event there were an attack?

Admiral Combs. Yes, sir.

Mr. Hamilton. To in turn attack the Russians?

Admiral Combs. Yes, sir.

Mr. Hamilton. What targets would they be able to reach from where the fleet is this morning, Admiral, in terms of their range? Combat radius, I should have said.

Admiral Combs. I have got to get more information. Could I give that for the record, sir?

(The information requested has been supplied to the committee in classified form.)

Mr. HAMILTON. Certainly, but could you give us any approximate indication?

Could they penetrate very deeply into Russia?

Admiral COMBS. No, sir. They would not be required to penetrate very deeply into Russia because we have targets assigned.

Mr. HAMILTON. I was talking not so much about the plan, as about capability.

Admiral COMBS. Yes, sir, but you understand, sir, that this is a well-thought-out plan.

Mr. HAMILTON. I am sure it is.

Admiral COMBS. In which SAC and we and the whole batch of us all strike targets in which the coverage is considerable. And if we went wandering off and hit targets other than the ones which we had been assigned, we might throw out the balance of all of this thing.

So what we plan to do, and it is a good thing, it seems to me, to know exactly at all times what targets you are supposed to hit, and if you can possibly hit them, that is what we must do.

SCOPE OF HEARING ENLARGED

Senator SYMINGTON. Admiral, could I interject there just a minute to show what part of our problem is?

Neither the Chair nor Senator Jackson not Senator Ervin planned originally to get into this question of naval airpower. Senator Saltonstall and Senator Duff in effect demanded that we get into it. I don't say that that was wrong. I do say that it has extended the scope of the hearing, and lengthened the time. Now we want the facts.

The original scope of these hearings, as outlined by Senator Russell in his letter setting up this subcommittee, was to do two things. First, ascertain the strength of our Air Force vis-a-vis the Russian Air Force. Second, find out whether the Air Force was getting enough money to have by the target date of July 1, 1957, a true 137-wing Air Force.

That was the beginning and the end of the original scope of the hearings. But at the request of those just mentioned, we have now broadened it to where, in effect, we are into this question of roles and missions.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. I hope you understand that.

Senator DUFF. May I say, Mr. Chairman, in that connection, I think the testimony of the Navy air arm has shown how wise it was to broaden it.

Senator SYMINGTON. I am very interested in the testimony, and I think it is an excellent presentation.

Will you proceed, Mr. Counsel?

RANGE OF CARRIER AIRCRAFT

Mr. HAMILTON. So that there would be the heavy-attack bombers which would be available? (D)

Admiral COMBS. Yes, sir.

Mr. HAMILTON. They have a range of a thousand miles? (D)

Admiral COMBS. Yes, sir. (D)

Mr. HAMILTON. Then turning to the light jet—unrefueled they have a range of 480 miles? (D)

Admiral COMBS. Yes, sir.

Mr. HAMILTON. Could they reach targets in the potential enemy-dominated area from where the fleet is this morning?

Admiral COMBS. Yes, in some satellite areas. (D)

Mr. HAMILTON. And those would be what—airfields?

FIRST ASSIGNMENT IS TO ELIMINATE THREAT

Admiral COMBS. Airfields, in the beginning, yes, sir.

In the beginning we are to wipe out the threat to us, the primary air threat to us. (D)

CARRIER AIRCRAFT WEATHER CAPABILITY

Mr. HAMILTON. What is the capacity of the heavy bombers as to weather? (D)

Admiral COMBS. They are all-weather.

Mr. HAMILTON. They could bomb at night or in the day?

Admiral COMBS. Bomb at night by radar, daytime, or in bad weather.

Mr. HAMILTON. What is the capacity of the light jet aircraft as to all-weather capability? (D)

Admiral COMBS. As I mentioned a little bit ago, that is the McDonnell F2H, 450 knots, combat radius up to 550 nautical miles. (D) Now they have the capability of flying in bad weather, but as I said a few moments ago, they do this loft bombing over the shoulder.

Since they let down to low altitude, they must be able to see a point which is a reference point, they call it a reference point. (D)

(Senator Duff left the room.)

Mr. HAMILTON. Then what about the propeller light attack aircraft with a combat radius of approximately a thousand miles?

Are they all-weather bombers?

Admiral COMBS. They are the same as F2H's. They can fly in all weather, including night, but they must have a visual reference point.

Now that is at the present time.

Mr. HAMILTON. Yes, that is what we are talking about.

Admiral COMBS. As the later models come along, our capabilities increase a great deal. (D)

CARRIERS A PRIMARY ENEMY TARGET

Senator SYMINGTON. If the Soviets decided they were going to make an all-out attack on the free world, including the United States, and if they assumed rightly or wrongly that you had nuclear weapons on your carriers in the Mediterranean, they would conclude that, unless they get the carriers, the planes from the carriers would have a chance of getting some of the cities in their sphere of control; would they not? (D)

Admiral COMBS. Probably ,sir.

Senator SYMINGTON. So one of the first primary targets would be the carrier? (D)

Admiral COMBS. We have always expected them to be.

Senator SYMINGTON. To some extent that would be a decisive factor in the amount and extent of their air attack against the fleet; would it not?

Admiral COMBS. I should think so; yes, sir. They would have, of course, as you well know, Mr. Chairman, many more targets that they should be hitting at the same time than the fleet right there. Also, if they were making a sneak attack, they might well consider it wise to coordinate the timing of an attack on the carriers with their attacks on other important targets. (D)

Senator SYMINGTON. We have been discussing a carrier in the Mediterranean around the Messina boot. If you had a carrier there, they might hit it with fighters, light bombers, with anything if they wanted to in a one-way mission. While, if they are going to hit United States cities, they have the problem of refueling on most of the aircraft they have now. (D)

Admiral COMBS. Yes, but it will depend on the amount of advance warning the carriers get. (D)

QUESTION OF SOVIET AIR SUPREMACY IN EUROPE

Senator SYMINGTON. Just so long as you understand some of the bases of my questions.

Admiral COMBS. Yes, Sir.

Senator SYMINGTON. In February of this year the Secretary of the Air Force said that the Russians' obtaining a 1,500-mile missile would not affect the balance of power between the East and the West.

Upon investigation, I found out the reason he felt justified in publishing that statement to the American people was because the Soviets have so many thousand jet bombers and fighters in their inventory that he felt they could destroy Europe anyway, without that new missile. In other words, inasmuch as they can do it with a knife today, why worry whether they get a gun also.

The problem that leaves, as one ambassador presented from the standpoint of his own country's apprehension, is where does that leave NATO?

If he is correct, carriers are going to be hurt and hit along with the other targets in Europe. That is one of the reasons I was asking the question.

Admiral COMBS. Well, is it your feeling that the statement meant that those targets in Europe would be hit by conventional aircraft or by the 1,500-mile missile?

Senator SYMINGTON. No. My understanding is——

Admiral COMBS. I am asking that for my information.

Senator SYMINGTON. That is a good point.

I am sorry I was not clear.

The justification of the statement was that the great predominance, perhaps the best word is "supremacy," of the Russian air force in Europe as of today means that they can destroy Europe in an all-out attack if they decide they want to do it. That, of course, would embrace all targets in Europe, including carriers in the Mediterranean as well as cities and airfields.

That was the only justification I could find for the statement.

QUESTION OF ATTACK BY IRBM VERSUS AIRCRAFT

Admiral COMBS. I believe that the carrier task forces are in a much better position when the Russians are trying to shoot at us with the 1,500-mile ballistic missile than if they sent a lot of planes after us.

Senator JACKSON. When you are at sea?

Admiral COMBS. When we are at sea, when we are under way.

Senator SYMINGTON. That supports the point I was making. They say they have such a tremendous predominance today of piloted jet aircraft, modern piloted jet aircraft, that they can destroy Europe.

I believe that you would be better off in a carrier against an IRBM probably than a piloted plane; but I think it fair to say fixed bases would not be better off.

Admiral COMBS. No, sir; they would not. They would get it from both sources.

Senator JACKSON. Certainly there is a difference between an IRBM and an IL–28 going toward a land base. An IL–28 can be detected if radar is working, is that right, Admiral?

Admiral COMBS. Yes, sir.

Senator JACKSON. The time of launching of a 1500 mile IRBM to point of impact is less than 10 minutes.

If the IRBM hits the target, it is impossible to launch your attack aircraft, right?

Admiral COMBS. Yes, sir.

Senator JACKSON. In the case of an IL–28, if your radar detection is working, you should be able to get your aircraft off the ground, right?

Admiral COMBS. Yes, sir.

Senator JACKSON. In one case you can get bombs on the target, in the other case you just get bombs on you, and nothing off, assuming that they work?

Admiral COMBS. And there is one more difference, sir.

Of course you can crank in a change in plan to the IL–28. He can change targets; if it is too fierce for him at this place, he can go off to another target. The IRBM has had its directions cranked into it before it leaves the ground and it is committed once it is in flight.

Senator JACKSON. I was referring only to a land base.

Admiral COMBS. Yes, sir.

Senator JACKSON. He can be a kamikaze coming in. He just does not have to worry about going off to another base.

Admiral COMBS. Yes, sir.

Senator JACKSON. If the ack-ack is too much, why he just keeps on going, unless you have your antimissile missile. (D)

GET AIRCRAFT IN AIR TO SAVE PLANES

Mr. HAMILTON. General LeMay has testified that, in the event of a surprise attack at the present time, one of his principal concerns would be to get as many of his aircraft as possible up in the air for defensive purposes.

I wondered if a similar problem existed with the Navy or whether you did not have to worry about that problem.

Admiral COMBS. No, we have airplanes that we would get in the air for defensive purposes.

Mr. HAMILTON. I don't mean as defending aircraft; but his testimony was that, with respect to his bombers, just to save them from being hit on the ground—or as I suppose you would say on the deck—he would want to get them up in the air as soon as possible.

I wondered if a similar situation existed with any of these naval aircraft.

Admiral COMBS. We have done that many times in World War II; we have got our planes in the air for protection. (D)

IN CASE OF SURPRISE ATTACK, REAR ELEMENTS OF FLEET WOULD MOVE UP

Mr. HAMILTON. In the event of a sneak attack of the hypothetical kind we have been discussing, would it be contemplated that, following an attack, elements of the Atlantic and Pacific Fleets, that are not now either in the Mediterrannean or in the Far East would be dispatched. (D)

Admiral COMBS. Yes, sir; they would be dispatched just as quickly as possible to carry out their war plans.

All forces know exactly where they are to go and how to get there, and when they get there they know what they are to do. (D)

(Senator Jackson left the room.)

THOSE ALREADY DEPLOYED WOULD MOVE INTO ACTION

Admiral GRIFFIN. I might point out, however, that the carrier forces or the naval forces which are in the Western Atlantic and the Eastern Pacific would go into action immediately against enemy forces wherever they may be. If there are submarines or if there are enemy aircraft that are in or approaching our territory, we would go into action against them immediately and fight our way over to the source of the trouble. (D)

CAPABILITY TO INCREASE IN FUTURE

Mr. HAMILTON. It might be interesting, Admiral, if you would care to do so, for you to comment as to the extent to which your capability to strike your targets would be improved by 1958 over your present capability, with reference to such matters as increased range of your aircraft, increased all-weather capability of the air arm, and so forth. Would you prefer to supply that for the record in a statement?

I think it is clear from your testimony that there will be an increase in your capability?

Admiral COMBS. There is a great increase in the capability, yes, sir, and I can do either way as you prefer.

I have one of my specialists here, Commander Weisner, who I believe can give us a pretty good rundown on that.

Mr. HAMILTON. I think it would be helpful to get it in the record at this point.

Commander WEISNER. I am Commander Weisner.

Mr. HAMILTON. You have been sworn?

Commander WEISNER. Yes, sir.

As pointed out in the testimony, in the period from 1958 to 1960 our capability will be considerably greater in ranges, also in numbers

of all-weather aircraft, also in radar equipment that we will have in light attack aircraft at that time.

If you would care to get specific numbers we can furnish that for the record.

Mr. HAMILTON. Yes, I think it would be helpful if you could give us the specific number of aircraft that would replace these aircraft and what their ranges will be.

Commander WEISNER. That can be supplied for the record.

Mr. HAMILTON. Which will be all-weather, and which will not?

Commander WEISNER. Yes, sir.

Admiral COMBS. Yes, sir, we will have that.

Mr. HAMILTON. In other words, if you could put into the record the same information with respect to the characteristics of the aircraft you will have in 1958–60 as has gone into the record with respect to the present aircraft——

Commander WEISNER. We can supply that, sir.(D)

(The information requested has been supplied to the committee in classified form.)

QUESTION OF NAVY LANDBASED AIRCRAFT IS ATTACK PLANES

Mr. HAMILTON. Are there any other land-based aircraft under the jurisdiction of the Navy, apart from those you have mentioned, that would be available today in the event of a sneak attack by the Russians?

Admiral GRIFFIN. We have patrol aircraft of course, but they are not in attack category.

Mr. HAMILTON. Commander, if the capability in that regard is going to be increased in the period 1958 to 1960, it would be helpful if you could supply information as to such an increased capability for the record.

Commander WEISNER. We will indicate that, sir.

(The information requested has been supplied to the committee in classified form.)

(Senator Symington returned to the hearing room.)

Mr. HAMILTON. I have come to a breaking point in my questions.

Senator SYMINGTON. Admiral, we will look forward to seeing you at 2:30.

(Whereupon, at 12:35 p. m., the committee was recessed until 2:30 p. m. of the same day.)

AFTERNOON SESSION

Present: Senators Symington (presiding), Jackson, Saltonstall, and Duff.

Also present: Same as appearing at the morning session.

Senator SYMINGTON. We will call this afternoon session to order.

It is our plan to go from 2:30 to 4:30. We will decide what, if anything, we will do tomorrow.

Admiral Combs, we welcome you back with us, sir.

TESTIMONY OF VICE ADM. THOMAS S. COMBS—Resumed

Admiral COMBS. Thank you, sir.

Senator SYMINGTON. If there is anybody you think might testify who has not been sworn, we will swear him at this time.

Admiral COMBS. I do not believe I have anybody here who has not been sworn who will testify.

Senator SYMINGTON. You and the other witnesses and the members of your staff, please consider yourselves sworn.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. Mr. Counsel, I think you were in the process of interrogating.

Mr. HAMILTON. Yes, sir, I have some further interrogation, Mr. Chairman.

OPTIMUM POSITION OF FLEET IN CASE OF ATTACK

Admiral, with reference to the point which you and I were just discussing before the meeting convened, I wonder if you would be so good as to give the committee the benefit of the views you expressed to me as to what position you would prefer to have your fleet in, in the event that it were going to receive a sneak attack, or in the event that it was going to deliver a sudden attack against the Communist territory. (D)

Admiral COMBS. The optimum position could be described as being a fairly good distance from enemy airfields which would base and operate bombers, that we would anticipate would come out for us. If possible, it is also desirable to have a friendly land mass between us and those bases. (D)

QUESTION OF WHETHER MEDITERRANEAN IS TENABLE

Mr. HAMILTON. If the Communists had control of Greece or Yugoslavia or Italy, would the Mediterranean be a tenable place from which we could operate carrier forces?

Admiral COMBS. That would be problematical. It might come to the point where we could no longer stay in there, because if these NATO countries were not with us, the conditions would change entirely. We would have to reassess our position. (D)

TRAINING AND PLANNING EXERCISES

Mr. HAMILTON. Has the Navy task force ever had occasion to engage in war-game exercises or maneuvers against defending forces in the United States, or anywhere else, which would provide information as to what would be likely to happen; that is, the strength of the defense against the strength of a strike, under conditions similar to those of the hypothetical example we discussed this morning?

Admiral COMBS. We have held war games. We hold them in the United States and we have held them in the Mediterranean.

Mr. HAMILTON. I just wondered if you had held any that came close to a simulation of the kind of conditions that might exist in the hypothetical situation.

Admiral COMBS. We have run exercises. Those I would not call war games, but we have run exercises in which our low-level bombers penetrated deep into the United States through radar coverage, and they were successful in going back inland a thousand miles and coming back out.

Mr. HAMILTON. Were the defenses alerted?

Admiral COMBS. Presumably they were; yes, sir. They were told that these planes would come——

Mr. HAMILTON. Have there been similar exercises in which a task force has been attacked by substantial numbers of submarines?

Admiral COMBS. Oh, yes. We have run exercises.

I can recite one, for instance, which we ran in the Mediterranean where, for the sake of the problem, we laid out an area, a rectangle of a certain size, through which the fleet had to go, and within that area a certain number of submarines were placed.

It was purely a test to see whether or not the fleet could keep these subs down and keep them from attacking. We had the benefit of antisubmarine warfare patrol aircraft which are stationed in the Mediterranean.

We had one squadron of our P2V patrol aircraft.

Mr. HAMILTON. Where are they based, sir?

Admiral COMBS. In the British island of Malta right at the present time.

Our forces, our antisubmarine warfare planes, were able to keep these submarines down.

These submarines were the conventional type of submarines. They were not snorkeling submarines. They were made up of Turkish and Greek, United States and British submarines.

Our patrol planes at that particular exercise were able, with their radars, to spot these submarines and force them down underneath the water to the extent that our task force went through there without any of them being able to simulate a torpedo attack on us. We knew when their torpedo attack was consummated, if they made one, because they would then shoot up a red rocket the minute they did it and, of course, that would alert everybody to the fact that someone had been hit by a simulated torpedo.

Mr. HAMILTON. Do you recall how many submarines were engaged in that operation?

Admiral COMBS. I think there were 7 or 8, sir, as I remember.

Mr. HAMILTON. Would the fact that they were not snorkel submarines make them less effective than the snorkel submarines would have been?

NUCLEAR SUBMARINES MORE DIFFICULT TO DETECT

Admiral COMBS. I don't think so, sir, because with our radars we can pick up the snorkels. It is the ones that submerge and stay submerged, like the nuclear submarines, which are the ones against which we have to rely completely on sonar to detect.

Mr. HAMILTON. Are they more difficult to detect than either the snorkel type or the conventional type?

Admiral COMBS. They are more difficult. (D)

MISSIONS OF VARIOUS SHIPS IN CARRIER TASK FORCE

Mr. HAMILTON. In a representative carrier task force, what would be the principal use of the cruisers, destroyers, and submarines?

Admiral COMBS. Defense and warning for the carriers. (D)

Mr. HAMILTON. What would be the use of the other craft in the force, other than the carriers, such as the amphibious warfare ships, the mine warfare ships, the seaplane tenders, etc.

Admiral COMBS. The amphibious warfare ships would be brought up if and when Marine landing was called for. The mine warfare ships would clear the way for the amphibious ships before they came in and unloaded. Other ships in the task force provide the logistics, the oil, the beans, the butter, and the milk. (D)

Mr. HAMILTON. And I understood you to say the Mediterranean Fleet was largely maintained, replenished at sea, and supplied from land bases in the United States.

Admiral COMBS. That is correct; yes, sir.

Mr. HAMILTON. Would that similar situation exist with respect to the Far Eastern Fleet?

Admiral COMBS. Yes, sir.

Mr. HAMILTON. I wonder if you would supply for the record the figures as to the cost of these various ships and of the aircraft, so that the committee could have information before it.

COST OF UNITS IN TASK FORCE

It is not necessary now, but the cost of a task force of this kind.

Admiral COMBS. Of the task force that we talked about originally?

Mr. HAMILTON. Yes.

Admiral COMBS. The ones which go in and make the strikes. That is the carriers, the cruisers, the destroyers, and the submarines.

Mr. HAMILTON. Well, I think it might be helpful, as long as you are going to do that, to give us the cost for all of these ships, and the aircraft that are on them.

Admiral COMBS. I will provide this.

(The information requested has been supplied to the committee in classified form.)

Mr. HAMILTON. I think that brings me to the conclusion of this phase, Mr. Chairman.

Senator SYMINGTON. Senator Jackson, you had a bill on the floor, anyway.

Senator JACKSON. I have one coming up.

Senator SYMINGTON. I was going to ask counsel to yield to you.

Senator JACKSON. I understand counsel is all through with his interrogation for the time being.

Mr. HAMILTON. Yes, sir. (D)

QUESTION OF SOVIET MISSILE CAPABILITY FROM SUBMARINES

Senator JACKSON. Well, does the Navy agree, Admiral, that the Soviets have a missile capability from their submarines?

Admiral GRIFFIN. We have no evidence of that, sir. We don't know. (D)

Senator JACKSON. I don't know. I merely am asking.

Admiral GRIFFIN. My point on that is we have no definite information that is satisfactory to us and definite, but we must assume they have some.

Senator JACKSON. You would not want to predicate your planning on the assumption they did not have?

Admiral GRIFFIN. No, sir.

ENEMY SUBMARINES BIG PROBLEM TO TASK FORCE

Senator JACKSON. What I am leading up to is, what if they get out 200 miles from the task force and lob a missile with a hydrogen warhead? Have you been thinking of that possibility?

Admiral GRIFFIN. What point would they aim it at, sir?

Senator JACKSON. At what point?

Admiral GRIFFIN. Yes, sir.

Senator JACKSON. Well, into the general task-force area.

Admiral GRIFFIN. Well, the task force can be in a lot of positions.

Senator JACKSON. Well, I am assuming they have located it. They have a pack of submarines, and they get the position. (D)

Admiral GRIFFIN. Well, they must have a submarine that is close enough to the task force in order to pinpoint its location, sir.

Senator JACKSON. I say they have a pack of them, a pack of subs. I just want to know for the record. Is it a problem for the Navy? Are you thinking about that possibility?

Admiral COMBS. Yes, sir; we are thinking about it.

Admiral GRIFFIN. Yes, sir.

Senator JACKSON. It is not hypothetical, is it? It is a realistic problem.

Admiral COMBS. It is a realistic problem, and we are studying it.

Senator JACKSON. I notice in the paper, by the way, where they now claim they can launch missiles under water, I mean, while the submarine is submerged. I do not know. (D)

Admiral COMBS. When you do that, when you launch a missile from under water like that, as a rule that missile must have some kind of guidance cranked into it before it starts, and then we get ourselves back into the ballistic missile business, which means that you have got to pinpoint something. (D)

Senator JACKSON. Well, Admiral, you would agree that one primary mission of the Soviet submarine force would be to force our great Navy to be far away from or at least out of range of the Soviet land mass.

Do you not think they give that pretty high priority, to use their submarines in that way?

Admiral COMBS. I would think so, surely; they surely would.

Senator JACKSON. I think they fear our Navy, and they have a reasonable assumption to fear it, don't you think?

Admiral COMBS. I think so, yes, sir; I agree with you.

Senator JACKSON. So with the number of submarines that the Soviets have, you feel you have a pretty big problem on your hands?

Admiral COMBS. We have a big antisubmarine problem on our hands. We are not trying to discount that one at all. We have a big problem.

SOVIETS BUILDING SUBMARINES FAST

Senator JACKSON. Looking ahead to 1959 or 1960, how many submarines do you expect the Soviets will have? (D)

Commander ELKINS. While the precise date is not clearly indicated, they are still building them at a rapid rate. (D)

Senator SYMINGTON. What worries me in some of this discussion, and I have talked to many people, including some in the Navy, is that until this matter of missile-launching capacity came up, one has in effect considered the submarine primarily as a defensive weapon.

QUESTION OF ENEMY SUBMARINE'S CONTROLLING THE SEAS

The Communists know we are, and will probably stay, superior to them on the top of the water. That is the one place we know we are now superior. The question comes up as to whether they are building this gigantic submarine fleet with the premise of a defensive situation; or whether, in the back of their heads, they are hoping ultimately to take control of the sea helped by a weapon which they hope we will continue to consider as only a defensive weapon. (D)

I understand last year we watched our economy to the point they built many many times as many submarines as we did. (D)

I am also most interested in the economy, but I am worried about the possibility they would try to get control of the sea through heavy concentration on the production of an underwater weapon which has now also become an offensive weapon.

I do not express myself well in this field.

Senator JACKSON. Mr. Chairman, I think the admiral's point was that, of course, in order to lob it into the task force you have to locate the force. I did not mean to interject. (D)

Admiral COMBS. As I said a few minutes ago, the question of antisubmarine warfare is a problem. (D)

Senator JACKSON. Generally speaking, Commander, you feel, then, that the atomic submarine is no different from the conventional type of submarine, as far as ferreting it out and coping with it, except for the fact that you have a problem of dealing with a vessel that can stay submerged indefinitely; and, secondly, a vessel or submarine that can travel faster under water.

Have I summarized it correctly?

Commander ELKINS. Generally speaking; yes, sir.

Senator JACKSON. But when they get the speed of this——

Commander ELKINS. One factor, some of our equipments are better against snorkeling submarines, and if this submarine does not have to snorkel, there is a limitation there.

FAST SUBMARINES THREAT TO CONVOYS

Senator JACKSON. But as far as dealing with big convoys and merchant vessels, and so on, in a convoy, one *Nautilus* type submarine or one faster, as they will be, could really run circles around anything in the area; could it not?

Commander ELKINS. Yes, sir.

Admiral COMBS. They had better run big circles, though, sir.

Commander ELKINS. It is a question, Senator Jackson, of timing. By the time they have the quantity of submarines, we feel that our capabilities will have improved.

CARRIERS IN PORT

Senator JACKSON. Admiral, taking into consideration the disposition of the carriers in the Western Pacific, the Atlantic and the Mediterranean areas, how many of the total number of carriers are in port and how many are at sea right now? I wanted to get that.

Admiral COMBS. How many are in port? In the Atlantic-Mediterranean, they are at sea.

Senator JACKSON. Yes.

Admiral COMBS. In the Pacific today, right as of now, and we checked at noon, they are all in port, in various places, not together.

Admiral GRIFFIN. One of them was underway this morning.

Admiral COMBS. One underway; three of them in port.

Senator JACKSON. What I am leading up to is this: You will concede that the Soviets keep track of our Fleet, and that at least as far as the carriers that are in port are concerned, they could do a pretty devastating job, assuming they had a 200-mile ballistic capability with a substantial warhead.

Admiral COMBS. From a submarine?

Senator JACKSON. Yes.

Admiral COMBS. Yes.

Senator JACKSON. It would be pretty rough.

Let's just forget the carriers that are at sea. As of today, if you assume that they do have a capability of launching a missile of 200 miles——

Admiral COMBS. And if this is a surprise attack.

Senator JACKSON. And a hydrogen bomb; yes.

Admiral COMBS. And if the carriers are in port, in peacetime; yes, sir, they would.

Senator JACKSON. Well, they have subs out now, do they not, wandering around in the Pacific? They do not have to have very many to get one carrier if it is tied up in port, especially with a hydrogen bomb warhead.

Admiral COMBS. No, sir. That is right.

Meeting all these conditions, there is a threat there; yes, sir.

NAVY TARGETS ARE PRIMARILY NAVAL INSTALLATIONS

Senator JACKSON. How many strategic targets have been assigned to the Navy? How many air atomic targets have been assigned?

Admiral COMBS. I have the figures for you in classified form. (D)

Senator JACKSON. The targets are naval installations and airfields, with the majority being naval installations; is that correct? (D)

Admiral COMBS. Yes, sir.

Senator JACKSON. These are the targets for the Pacific, the Atlantic, and the Mediterranean Fleets. Is that right? (D)

Admiral COMBS. Yes, sir. (D)

Senator JACKSON. What is your time period on this?

Captain CONNOLLY. The targets and weapons referred to are for the fiscal year 1956.

HOW FAST CAN NAVY ACT?

Senator JACKSON. No; I meant what is the time differential between the first strike and the last one on your program? You have got to go faster than the fiscal year.

Captain CONNOLLY. The strikes in the western Pacific and the strikes in the Mediterranean will occur just as rapidly as the strikes can be gotten off. The strikes of the 1st and 2d Fleet will depend on many things.

Senator JACKSON. Well, roughly, is it the first week or when?

Captain CONNOLLY. I don't think the question can be brought out, the answer can come out in just flat any length of time. It depends on whether or not we get any warning at all.

If we get a strategic warning, then many of those targets are going to be just as simultaneously struck as the others, which we can do now with the deployed forces. Ⓓ

ON APRIL FIRST, FOUR OF SIX CARRIERS IN PORT

Admiral GRIFFIN. Going back to the discussion of the April 1 problem, sir. The subcommittee staff suggested we would be asked this line of questioning, and gave us the date of April 1, which happened to be a Sunday, so these figures refer to the disposition of the fleet April 1.

Senator JACKSON. The Chaplain has now done his job. It is Sunday, we have got all of our prayers behind us. We have got the ships in the Mediterranean, the two carriers, is it?

Admiral COMBS. Yes, sir.

Senator JACKSON. And they are off Corsica.

Admiral COMBS. No, sir. We are getting ourselves all mixed up here.

Senator JACKSON. Let's get the April disposition.

Admiral COMBS. With the April 1 disposition, this is the problem. With the problem we have this morning, we had our carriers at sea.

Senator JACKSON. I understand.

What is the April 1 disposition?

Admiral COMBS. The April 1 disposition would be like this. I will give it to you right here.

Two were at sea in the western Pacific, 2 were at sea off the China coast; 2 were in Japanese ports, 1 at Yokosuka and 1 at Iwakuni.

The 2 carriers in the Mediterranean were in port. One was in Naples, and 1 in San Remo, Italy, near Nice in southern France.

Senator JACKSON. Right.

So we had two actually at sea.

Admiral COMBS. Two actually at sea, in the April 1 problem we are talking about.

Senator JACKSON. I understand. We have 2 at sea in the Western Pacific, 2 in the Japanese ports, and in the Mediterranean they are both in port. Ⓓ

Senator SYMINGTON. If the Senator will yield there.

Again going back to the premise of the importance of attacking the carrier if there is knowledge they are carrying hydrogen bombs, would not the carrier in port be subject to attack without the maneuverability it would have if at sea?

Admiral COMBS. An attack without warning, yes, sir.

Senator SYMINGTON. Without warning, yes.

WAR GAME VARIABLES

Senator JACKSON. Following up the chairman's questions, what assumptions would you make as far as damage to your carriers goes—to your ability to strike when you have this warning?

Have you given the enemy credit at all for being able to cut the strike ability of the carrier's at sea?

Admiral COMBS. Not in this problem we have not.

We worked the problem——

Senator JACKSON. Have you worked any problems with that assumption?

It is reasonable to assume, is it not, that the enemy wants to destroy your ability to deliver atomic weapons.

Is that not his primary mission, at least in the early stages of an air atomic conflict?

Admiral COMBS. Yes, sir.

Senator JACKSON. Have you made any studies on that?

Admiral COMBS. There are none to my knowledge.

Do any of you know?

Admiral GRIFFIN. We have run on various occasions, Senator Jackson, various types of war games on this particular subject. The way in a war game that you normally determine the percent amount of damage to given units depends upon the models and criteria which are set up for that particular war game. They will vary all over the lot, and by varying them your end results will vary.

In this particular case, there are so many variables that generally speaking in the war games that have been run the percentage of damage to the carriers has been determined by what is called a Monte Carlo method.

By that I mean you roll the dice in determining how many you have and how many you don't have.

I would like to make this comment in connection with war games. War gaming to be valid for any given set of assumptions must be run over and over and over again hundreds of times. Input factors should be changed with each running of the game.

It will then give you general trends.

Senator JACKSON. In order to get some prediction, you need a long series?

Admiral GRIFFIN. It will only give you a trend in making predictions and in the military these things are handled very carefully in dealing with specific questions, because serious errors may be involved. You can learn lessons and determine faulty areas, but serious errors may evolve if the war game results are accepted too literally.

Senator JACKSON. But it is mathematically almost impossible to count on your entire air atomic delivery system?

Admiral GRIFFIN. For the initial strike, sir?

Senator JACKSON. Well, initial right on through.

Admiral GRIFFIN. Well, we will certainly have losses; yes, sir.

FLEET LOSSES

Senator JACKSON. You will have losses on your initial strike, that is on planes alone, but I am talking now about the carriers?

Admiral GRIFFIN. We will have losses in ships; yes, sir.

Senator JACKSON. Yes.

Admiral COMBS. If they catch us in port.

Senator JACKSON. If they catch you in port, particularly.

Admiral GRIFFIN. Yes, sir.

Senator JACKSON. It is reasonable to assume the Soviets with 400 submarines are not going to launch an attack without, in advance, trying to get some of our delivery means. That is true?

Admiral GRIFFIN. Yes, sir; but if they have a lot of submarines out, we should have some advance warning.

Senator JACKSON. So what we are talking about here in strikes is the optimum number, assuming the entire delivery system is intact?

Admiral GRIFFIN. Yes, sir.

Admiral COMBS. I will add, sir, that in our training in the Mediterranean we have on many occasions practiced actually on quick sorties from port, where we had a little bit of warning ahead of time so that we could allow ourselves an hour to get underway and to get out and get our planes in the air.

Senator JACKSON. That would be all right in the Mediterranean, Admiral.

Admiral COMBS. Yes, sir.

Senator JACKSON. But supposing the carriers are tied up in Honolulu and the carrier in the Mediterranean is damaged. Planes cannot launch an attack on Russia from Honolulu, but they could in the Mediterranean.

Admiral COMBS. Yes, sir. (D)

AIR FORCE HAS MANY MORE STRATEGIC TARGETS THAN NAVY

Senator JACKSON. As I recall, Mr. Chairman, the Air Force has many more strategic targets than those assigned to the Navy. (D)

I don't want you to think, Admiral, there is anything antagonistic in any of my questions. I am a firm believer in finding the best possible delivery means of getting into the Soviet Union. For example, I have been pushing the use of subs.

I think there is great opportunity to prepare to be able to launch these missiles. No matter how you look at this picture, whether it is Navy or Air Force, it is going to cost money. We need to find the best means of getting the bombs on target. I am for whatever organization can get them in on the target.

Admiral COMBS. Yes, sir. (D)

Senator JACKSON. I don't envy your problems. I think the Navy has done a marvelous job.

PROGRESS AGAINST SUBMARINES

I listened to testimony 2 or 3 years ago, and it was really pretty dark with respect to the sub. I am glad to hear of the progress you have made on submarines, because that is certainly one of your biggest problems.

Admiral GRIFFIN. Tremendous effort has gone into this field, sir.

Senator JACKSON. I think you have done a marvelous job. That is all, Mr. Chairman.

Senator SALTONSTALL. Mr. Chairman, I thank you.

I did not hear all the testimony this morning so I would prefer to have Senator Duff ask questions.

Then if any occur to me, I will wait until he is through or until the chairman is through.

Senator SYMINGTON. I only have one or two questions.

Senator Duff?

CARRIER FORCE VULNERABLE IN SURPRISE ATTACK

Senator DUFF. Admiral, in the light of the testimony respecting the assumed size of the Soviet submarine fleet, and in the event of war by the Soviet without warning, do you believe that the Soviet could by

any anticipated possibility effectively or substantially neutralize the striking capabilities of our Navy?

Admiral COMBS. Under the conditions which you have stated, Senator Duff, that is the enemy submarines in place and with an attack, and I assume that to be an air attack also without warning, I think the Soviet could hurt the Navy. We would suffer losses.

Senator DUFF. Oh, yes; I agree with that all right.

Admiral COMBS. I think we would by no means be incapacitated. I think that we would have forces still available which would allow us to carry the war to the enemy.

FRIENDLY LAND AREAS IMPORTANT TO NAVY

Senator DUFF. Now the counsel made a suppositious question as I remember it, that if Greece, Yugoslavia, and Italy all deserted the free world and became part of the Soviet bloc, would not that situation require a complete reexamination of all your war plans?

In other words, if that happened, namely, that we lost Yugoslavia, Greece, and Italy, your present setup would have to be reexamined in the light of such a wholesale desertion of those who are now affiliated with us?

Admiral COMBS. Oh, yes, sir.

Senator DUFF. You could not anticipate the effectiveness of present plans with the complete defection of a major character without reexamining the whole situation in order to come to a conclusion; is that right?

Admiral COMBS. We would has to reexamine the whole thing; the whole Military Establishment would.

Senator DUFF. Those are the two questions I wanted to ask, Mr. Chairman.

Senator SYMINGTON. I would ask a couple of short questions.

QUESTION OF ALERTNESS AND ANOTHER PEARL HARBOR

First, referring to one question Senator Duff asked, the premise of the Navy's position is that it is always going to be on the alert against attack, isn't that correct?

Admiral COMBS. We are going to do our best, sir.

Senator SYMINGTON. And if you are not on the alert against attack, you are liable to get yourselves in heavy trouble this time, in the nuclear age, won't you?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. You lost a lot, regardless of whose fault it was, you lost a lot at Pearl Harbor; and you don't want to take anything like that again?

Admiral COMBS. No, sir.

Senator SYMINGTON. So that if you are not on the alert, based on the premises made, it might be we would lose our naval power, isn't that a fair statement?

Admiral COMBS. If we are not on the alert and if we got our naval power all concentrated to the point where it could be hit at one time, yes, sir.

Senator SYMINGTON. Regardless of concentration, there is potential against you that is relatively far greater than what there was at Pearl Harbor, is there not?

Admiral COMBS. Yes, sir.

IMPORTANCE OF ALLIES

Senator SYMINGTON. Now another question I ask is, you say if there was complete defection in the Mediterranean; but as I understood the questions given you by the counsel, there were certain countries which would be worse for us if they defected than others. You would want a reexamination if there was any defection of any country in the Mediterranean, isn't that correct?

Admiral COMBS. We would indeed, yes, sir, because our plans are based on the help and support we get not only from their seaforces but from their land and air forces. (D)

HOW CLOSE CAN CARRIER FORCE GET TO HOSTILE TERRITORY?

Senator SYMINGTON. Admiral, how close against the opposition of a country like Russia with its growing submarine fleet and its first-class naval force, or rather its first-class air defensive forces including its naval air, which we understand is also getting substantial, how close do you think a carrier can fight its way to the shore of that country in question?

I know that presupposes if you had good luck you could go so far and if you had bad luck you could go so far.

But what would be the average distance from which you think a carrier could start a strike? What would that distance be from the land?

Admiral COMBS. Mr. Chairman, if I had my way running the fleet, I would like to start my strikes toward Russia from a fairly good distance out into the Atlantic or to the western Mediterranean.

Now as we have discussed this morning, that protects you in many ways. It keeps you free of the short-range planes, they cannot get out to get you, and you can clear the area as you go in of airfields which have the capability and the people to get planes up to you later.

And as you get your reconnaissance reports as to what damage you have done, and see where you have been successful in cutting down their ability to protect themselves, then you move in farther and extend the perimeter of your attack a little farther, always ready to back off and go to another place and hit them and then back to this place and come at them again.

In other words, keep them off balance if you can.

Senator SYMINGTON. I think I understand, certainly far more than before, the theory of tactical and strategic attacks from a task force, but I want to ask the question again. (D)

When you say feel your way in, the premise is that you are under attack. As I understand it this Government does not intend to initiate atomic attack; therefore you are going to be under attack as you come in.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. And you still think you could get in that close? (D)

Admiral COMBS. I believe we could, yes, sir.

Senator SYMINGTON. That is what I wanted to ask.

Admiral COMBS. I believe we could, but it would have to be based on our ability to control the air locally around there, and to knock out their ability to come out and hit us.

Senator SYMINGTON. The staff asks the question whether the distance you mentioned is measured from the carrier itself or from the perimeter of the task force. (D)

Admiral COMBS. From the perimeter of my task force. (D)

Senator SYMINGTON. Thank you, sir.

Senator Saltonstall?

Senator SALTONSTALL. I have just 1 or 2 questions. (Discussion off the record.)

Senator SYMINGTON. Back on the record.

Senator SALTONSTALL. Just 2 or 3 questions, Admiral.

One was suggested to me by listening to Senator Duff and then to the Chairman.

ENEMY WOULD ATTACK FLEET EARLY

Would you expect under the present conditions of world affairs an undisclosed attack. if one was to be made by an enemy upon us, to be made upon our fleet?

I might explain why I asked that. It would not seem to me as a layman that an enemy today would use a hydrogen bomb or an atomic bomb if they are going to make their strongest attack first undisclosed, with all that goes with that, the hate and everything else.

Would they make it on our fleet?

Wouldn't our fleet be reasonably safe from being considered so important as to be the first line of an undisclosed attack?

Do I make myself clear?

Admiral COMBS. Yes, sir. I have always felt, sir, that looking at it from my position there in the Mediterranean where we had an atomic capability, that we would never go disregarded, that somebody would come over there and would project an attack at us, and that is why we try our best to keep prepared for that all the time.

Senator SALTONSTALL. Would that be the first attack on our country?

Admiral COMBS. We discussed that this morning, sir.

Senator SALTONSTALL. Then I won't go into it again. (D)

I asked that question with a view to bringing out what was in my own mind, that our fleet would probably not be damaged by the initial undisclosed attack to any great extent, if at all.

Do you agree with that?

(Senator Symington left the room.)

Admiral COMBS. I would like to think that, sir; but I am not too sure. I am not too sure that they would not come over and try to get us. (D)

Senator SALTONSTALL. I won't stress the point further. It was interesting to me because of what Senator Jackson asked and then what Senator Duff asked.

SATISFACTION WITH RATE OF MODERNIZATION

Admiral, do you feel today that we have our destroyers and our submarines well equipped with the very latest electrical gadgets and all the equipment that we believe is wise for a destroyer and a submarine to carry today?

Admiral COMBS. Senator Saltonstall, we do not now have our latest equipment on all of our destroyers and our submarines. We know what that equipment is, we have tested it out, it is being built and we are getting them on there as fast as we can.

Senator SALTONSTALL. Is that program going forward on time?

Admiral COMBS. Yes, sir; it is going forward all the time.

Senator SALTONSTALL. And you have the money for it?

Admiral COMBS. I believe that is right. I would like to check with my specialists here on the sonar business.

Commander ELKINS. We have been going ahead on it; yes, sir.

Admiral COMBS. The procurement is going along.

Senator SALTONSTALL. And you are satisfied, Commander, from what has been said as a specialist on that end of the business that it is the best and most modern equipment that there is?

Commander ELKINS. We feel that; yes, sir.

Senator SALTONSTALL. And you are making progres on it all the time toward improving what you now have?

Commander ELKINS. Yes, sir.

Senator SALTONSTALL. Now I have listened to the testimony at various times by the Navy. A task force today is built around an aircraft carrier. You have your cruisers, you have your destroyers, you have your submarines, and you have the element of dispersal.

FLEET NOT FULLY MODERNIZED

Do you feel that today an aircraft carrier is as adequately protected against a sudden air attack as is scientifically possible in 1956? What do you need that you do not have now?

Admiral COMBS. At the present time our ships are very much in the position of our destroyers and submarines.

We have the equipment and it is coming into the ships, but we do not have it in all of them yet.

For instance, the *Boston* is our first missile cruiser.

The *Canberra* follows along. It is a good missile ship.

We believe that Terrier is an excellent missile and it will be followed along by the Talos which is another excellent weapon, but we do not have them on all of our ships.

We acquire them as fast as we can put them on. We have the schedule for doing that. (D)

We feel that we are on the right track. We are getting the new equipment in just as fast as we reasonably can.

We are getting the new aircraft with much, much greater capabilities than we have had in the past, and along with these longer range bombers that we have, before too long we will have better all-weather fighters, which will help us a great deal.

BELIEVES LOSSES CAN BE TAKEN

Senator SALTONSTALL. So that, to follow up on what the chairman asked, you believe that today an aircraft carrier task force is equipped with its submarines, its destroyers, and its cruisers so that it is capable of making an attack even against the heavily built up defenses of an enemy in the air and under the water, if we find it necessary to do so.

Admiral COMBS. I think so. I think as we always find in war, Senator, we are going to suffer losses.

There is just no doubt about it. But we think that the losses that we suffer with the capabilities we have and our added weapons coming along, that those losses will be within the realm of something that we can take.

(Senator Symington reentered the room.)

ARE YOU SATISFIED?

Senator SALTONSTALL. Admiral, you are well satisfied that we have a modern, up-to-date, progressive, thoughtful Navy that is taking advantage of all the new equipment and going ahead?

Admiral COMBS. Well, sir, you are asking me to brag on ourselves here.

Senator SYMINGTON. Admiral, I know Senator Saltonstall understands the spirit in which I say this.

My distinguished friend from Massachusetts invariably listens to the testimony, and then at a point asks an all-embracive question which includes everything. He asks in effect, are you for motherhood, against sin, and for an early spring.

Regardless of the condition of the Navy, if the Senator repeats that statement on the floor of the Senate, many people who have not heard the hearings obtain a false impression. If the Senator says "I am happy to tell you that the people of the Navy, from the Chief of Naval Operations down say this is the most wonderful navy in the world, we don't need anything at all, everybody is satisfied," then of course that has heavy effect on what is done with respect to increasing authorization, appropriation, apportionment, obligation, and expenditure.

Inasmuch as I have made this little speech, and you will pardon its length, to the other services, I feel duty bound to make it to you.

Witnesses before this committee have no obligation of any kind except to tell the facts as they see them personally.

There is nobody for whom I have more respect in the Senate than for my distinguished senior colleague from Massachusetts. But I have often seen his operation and in my opinion it sometimes colors the situation. Now you answer the question in any way you see fit.

My duty is done.

Senator SALTONSTALL. Admiral, may I say this: the chairman of this subcommittee has made that statement a great many times to me. I have heard it before. I have never tried to silence him as he makes it. I am not sure whether I have the right to silence him. But it is a question that I like to ask.

It is not asked in any cynicism, and I won't mind if you brag. I won't mind if you are very cynical, but I would like an answer to my question.

Senator SYMINGTON. Will you repeat the question, please, Mr. Reporter?

Senator JACKSON. I think it is fair to say that the last few minutes was in jest.

(Question read by the reporter.)

MAKING PROGRESS, BUT LESS THAN DESIRED

Admiral COMBS. Mr. Saltonstall, I think in the United States Navy we have come a long way in the past few years in modernizing our equipment, and we have seen here in the way of antisubmarine warfare how much advance we have made. We feel that we are getting modernized fast.

As you understand, we have set ourselves a big job.

We are trying to go from our regular steam power to nuclear power, and we are trying to substitute the missiles for the gunpowder.

We are going from subsonic to supersonic airplanes, and all these things we are trying to do at the same time, and that is a great problem.

We believe we are advancing. We certainly believe that the steps that we are taking will make us much more modern than we have been in the past.

We are looking to the time some day when we can have all of our ships eventually with nuclear power so we won't have to worry about fuel.

We think these steps that we have been making are progressive. They lead us into much higher performance, much higher return, and certainly the people who have thought these things out I should think have been thoughtful. They really have thought us up lots of things.

Now this speech that I am making here, sir, does not mean that we are happy and satisfied with everything. We know that we have got a long way to go in this modernization. I would like to have all of these things that I talked about yesterday, but we cannot do it that way. We think the strides that we are making are in the right direction.

That is about all I have got to say.

Senator SALTONSTALL. Thank you, Mr. Chairman.

I would say the admiral has answered my question without bragging and in a very considerate, moderate way, much more moderate than I would expect.

Senator DUFF. I would like to ask another question, Mr. Chairman.

Senator SYMINGTON. I am sorry my colleague from Massachusetts felt the admiral would ever brag. The admiral would always give us the facts. I think his answer to the question was temperate, intelligent, and fair. All I was emphasizing was that this setup affords an opportunity to give this subcommittee the truth.

I hope I did not give you the idea that——

Senator SALTONSTALL. He used that expression before you came in.

Senator SYMINGTON. I beg your pardon, I did not hear that.

Senator DUFF. Senator Jackson has a couple of questions.

Senator JACKSON. No, go ahead.

I will wait until you are through because I asked a lot more questions than you did. Ⓓ

POSSIBILITY OF ADVANCE WARNING

Senator DUFF. Now if I may, Mr. Chairman, I would like to make another observation that I am not sure is correct, and it may be corrected if I am wrong. Speaking about the surprise attack on Pearl Harbor, it was my recollection that there was an enlisted man at a radar station that did detect a considerable time before they came in an air armada that nobody paid any attention to, and if they had paid attention to that information, they would not have been surprised. Is that correct?

Senator SYMINGTON. You are asking me?

Senator DUFF. Yes, sir.

Senator SYMINGTON. I understand that is correct, that the planes were seen, but due to error it was not followed up. Nevertheless, I hope the Senator does not feel that, inasmuch as today one hydrogen bomb could destroy a city or a fleet, from one airplane, there is any connection between the importance of detection then and now.

It was very important then to detect planes. But the problem today is one could shoot down 95 percent, yet if the fleet was in harbor, or a city where it is, you can still lose your fleet, or your city, or any airfield in the world, to 1 bomb from 1 plane.

Senator DUFF. I am not disputing that, Mr. Chairman.

Senator SYMINGTON. I did not answer it in any contentious manner. You asked me.

Senator DUFF. I merely wanted to make clear, as far as I understood the situation, that there was a prior warning, as there is apt to be a prior warning here by the modern methods which are much improved over the methods that existed at that time.

Senator SYMINGTON. I think that is a very good point.

(Senator Saltonstall left the hearing room.)

Senator SYMINGTON. Is that all you have, sir?

Senator DUFF. Yes, that is it.

Senator SYMINGTON. Senator Jackson?

CARRIER FORCE AN IMPORTANT ENEMY TARGET

Senator JACKSON. Admiral, I am sorry that Senator Saltonstall went out. I don't want to be repetitious, but I would like for the sake of the record to make one point clear once again. I take it that the Navy firmly believes that the Soviets, should they start an all-out atomic war, would certainly seek to destroy our means of retaliating with atomic and hydrogen weapons, is that right?

Admiral COMBS. I think they would, yes, sir.

Senator JACKSON. And you believe that the Navy is sufficiently powerful so that the Soviets are not going to overlook it?

I am not saying they are going to get it, but they are going to try to go after you?

Admiral COMBS. We feel they are. We feel that that is a definite threat and we should be prepared for it.

Senator JACKSON. In other words, in an all-out air atomic war, the first logical priority for the Soviets is to destroy our means of retaliating in kind, regardless of what the means may be; right?

Admiral COMBS. I think so; yes.

Senator JACKSON. That is a reasonable assumption, and you would credit them with that assumption?

Admiral COMBS. Yes, sir.

Senator JACKSON. At least that is what we would do, wouldn't we?

Admiral COMBS. Yes, sir.

Senator JACKSON. On your list here, airfields are included in your missions. (D)

Admiral COMBS. Yes, sir. (D)

Senator JACKSON. That makes sense, because if you don't knock them out they will be getting you.

Senator SYMINGTON. Submarine pens are important too.

Admiral COMBS. Submarine pens are very important.

Senator JACKSON. That would involve airfields, ports, naval airbases, shipyards, petroleum, transportation, and naval forces.

Admiral COMBS. Yes, sir.

Senator JACKSON. In order to get the matter in proper perspective, you cannot hope for a situation where the Soviet Air Force will go after SAC and not go after the Navy. Your carriers, with hydrogen bombs, aboard, undoubtedly would be a high priority in their thinking?

Admiral COMBS. I agree with you, sir; I think it would be.

ONLY NAVY, AMONG OUR SERVICES, IS WORLD'S LARGEST

Senator JACKSON. Now we have three services, Army, Navy, and Air Force. The Navy is the only one of our three forces that we can proudly say is the largest in the world, isn't it?

Quantitatively and qualitatively the Navy, in the aggregate is the largest navy in the world?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. Will the Senator yield there for me to get back on one of my most serious apprehensions.

Shouldn't we be worried, regardless of tonnage, in the potential strike capacity of this Communist submarine fleet?

Senator JACKSON. I was going to ask that.

Senator SYMINGTON. It seems that must be taken into consideration.

Senator JACKSON. Before World War II, or going back further than that, England had the largest navy in the world and we were second. Japan was what, third?

Admiral COMBS. Third, yes, sir.

SOVIET NAVY HAS PROGRESSED AT GREATER RATE THAN UNITED STATES NAVY

Senator JACKSON. And today Russia has the second largest navy in the world, speaking quantitatively and qualitatively.

We have the largest navy in the world, speaking in the same sense?

Admiral COMBS. Yes, sir.

Senator JACKSON. However, events since 1945 have tended to cut down the size of the American Navy relative to that of the Soviets?

Admiral COMBS. You mean by their building of submarines and cruisers?

Senator JACKSON. Cruisers and everything.

Admiral COMBS. Certainly they have closed the gap in that time. In this connection, the subcommittee counsel has requested I provide for the record a statement of estimated Soviet postwar naval con-

struction, and brief comment on estimated effectiveness of Soviet ship types.

(The requested statement has been supplied to the committee in classified form.)

Senator JACKSON. I am talking about the relative position of the Soviet Navy and ours. The Soviets have made substantial inroads.

Admiral COMBS. Yes, sir.

Senator JACKSON. We are still the largest Navy in the world but I am merely pointing out the problem. We have been going downhill in relation to the Soviet Navy.

Admiral COMBS. I would much rather we would say they have been coming uphill than for us to go downhill.

Senator JACKSON. I agree with you. I think that is a better choice of words. I agree.

SOVIETS HAVE BIGGER MODERN ARMY AND AIR FORCE

Our Air Force is quantitatively behind the Soviets as far as jet planes are concerned.

Qualitatively I don't know. That is an argument.

We have the third largest Army in the world. So of our 3 services, the 1 service that is out front is the Navy. I think that is the general picture.

Now are you satisfied that you can maintain the position you should maintain, knowing what the Soviets are doing in the next few years, with the funds you are now getting, for all purposes?

I am asking for your professional judgment, without regard for what you may have been told you could ask for.

But suppose you are speaking just as a professional sailor, what would your answer be?

NAVY NEEDS PERSONNEL AND FACILITIES

Admiral COMBS. As a professional sailor I would think that we need a lot of things. There are several areas in which I think we should have more.

One is in the area of personnel. We have touched on that, but our personnel——

Senator JACKSON. You are going to go into that again a little later?

Admiral COMBS. The personnel presentation will come later to you.

Senator JACKSON. I am talking about capital outlay for planes, ships.

Admiral COMBS. In connection with the capital outlay, we need a lot of facilities. We need facilities; there is no doubt about it.

DO NOT NEED MORE SUBMARINES

Senator SYMINGTON. If the Senator will yield, do you need more submarines?

Admiral COMBS. I don't think we need many more submarines, sir, for the reason that our submarines are tailored to a different problem than are the Russians.

NEED PLANES, BUT NO SHORTAGE OF MONEY FOR PLANES

Senator SYMINGTON. Do you need more planes?

Admiral COMBS. We could use more planes; yes, sir.

Now if I may, I would like to speak a word to that.

Since 1950 we have had a considerable amount of money. We have had more money to spend for airplanes than we have actually been able to spend.

For instance, this year we are getting airplanes whose deliveries have been delayed through the industry's inability to build them as fast as they had planned to do it, we are getting many more planes this year than we have budget money for.

In other words, we are still getting deliveries on last year and the year before's budget.

Senator JACKSON. Carryover funds?

Admiral COMBS. Carryover funds, that is correct.

This year we will have money enough to get all of the modern planes—I am talking only of the modern planes which we want—all of them that industry can provide us with within the funding period.

If we spent more money on the planes that we want, we would be now appropriating money that we could not spend within the funding period, and we would just as well get it next year.

You understand that phase of the matter better than I do. Certain types of airplanes we could use more of, and the transport planes are in that category. We could use more transport planes.

Senator SYMINGTON. Will you yield?

Senator JACKSON. Surely.

WANT THE FULL STORY

Senator SYMINGTON. Unless there is some objection to it, inasmuch as they have been very much part of this hearing I would like to get testimony on this line of questioning from Admiral Russell and Admiral Griffin.

This is a chance for people to express their personal opinions. As I follow the questioning, what we want to know is: You have already testified the Communists are closing the navy gap. They have closed the gap long since on the Army.

In the opinion of some of us they are closing the gap on the Air Force. I say that after testimony from the Air Force.

Now we are interested in how fast they may be progressing in the closing of this navy gap, especially as you have testified their construction program has been far greater than ours since World War II. This is an opportunity to get all the facts and lay them on the table for the full committee.

Admiral Davis has been very fair in his handling of the record of the other services. We want as much of the record left in as possible but we don't want anything left in that might help the possible enemy.

With that reservation, may the Chair urge that you give us as much information as possible about the needs of the Navy. This is not an appropriation hearing. Rather a hearing to discuss the future military policy of this country as against the very rapidly growing army, navy, and air force of the Communists.

Thank you, Senator. I must leave.

Senator JACKSON. Can you wait a minute, Jim?
Senator DUFF. If you will make it very short.
(Senator Symington left the hearing room.)

IRBM SCHEDULE

Senator JACKSON. The Navy is working on the IRBM No. 2 on a joint Army-Navy project, right?
Is the Jupiter——
Admiral COMBS. Jupiter; yes, sir.
Senator JACKSON. How are you going to deliver it?
Admiral COMBS. Captain McKee is our ballistic weapons specialist.
Captain MCKEE. Senator Jackson, your question reaches pretty well into the future how you are going to delivery it. I am assuming you mean what operational concept do we have in mind for the delivery of it?
Senator JACKSON. When will you have one ready?
Captain MCKEE. Not for a few years. I will give you the schedule in classified form. (D)
However, I would like to add something to my answer, sir. The IRBM, insofar as the Navy's efforts are concerned, must be considered in the total perspective of all our surface-to-surface missile effort, which involves missiles that we have now and which will progressively improve and be used from the same inventory of using vessels during the period from now until and beyond 1960.

NEED MORE GUIDED MISSILE SUBMARINES

This involves the *Regulus*. It is now available and deployable in submarines, carriers, and cruisers. (D)
Senator JACKSON. You are going to need more submarines.
Captain MCKEE. We will need more guided missile submarines; this is correct.
They are in the program. (D)
We have the first guided missile submarine with nuclear power in the 1956 shipbuilding program.
It is quite possible that as time goes on, other nuclear-powered submarines that are currently under construction can have the guided missile capability incorporated in them.
This, however, is not in the present plan.
But the number of submarines will progressively increase, that is submarines with the missile capability, through the period from now until 1960 at which time we will have in the neighborhood of eight.
This could, by conversion of additional submarine construction, be increased by several.
Senator JACKSON. The main thing that I wanted to ascertain was whether or not you are moving along on your construction program so that you will have vessels in being, whether they are surface or subsurface, to utilize the IRBM.
Captain MCKEE. We have definitely a surface ship program addressed to the IRBM, and a submarine designed program at the present time.

BALLISTIC MISSILES VERSUS AIR-BREATHER MISSILES

We might as well be frank about it. It is designed, but we do have a surface-to-surface missile capability which is in being at the present time and will progressively increase.

If I could add——

Senator JACKSON. You mean the air breathers?

Captain MCKEE. That is right, sir.

Senator JACKSON. I am talking about ballistic missiles.

Captain MCKEE. Insofar as the effect on the target is concerned, it is quite possible that air breathers may be equally useful as the IRBM.

Senator JACKSON. It could be, but if you can get an accurate ballistic missile would not you rather take it than a subsonic air-breather?

Captain MCKEE. Our airbreathers are not subsonic, sir.

Senator JACKSON. Are all of them supersonic?

Captain MCKEE. Transonic or supersonic. (D)

Senator JACKSON. I think that is all on that part of it, Captain.

QUESTION OF SUFFICIENCY OF FUNDS

Admiral, do you feel that looking ahead and knowing the overall military capability of the Soviet Union—air atomicwise, armywise, navywise—do you feel that you will be able to carry out your service's assigned role and mission as you know it today with the funds that you now have and are requesting, or that are being allotted to you?

Admiral COMBS. Well, of course in the future we have no way of telling what would be allotted to us, but I am certain that we will, with the requests that we have put in for funds.

Senator JACKSON. Let's put it this way and get it in the proper tense.

On many of the items you have to get your funds today in order to be effective in 1958, 1959, and 1960?

Admiral COMBS. Yes, sir.

Senator JACKSON. Based on the present program you are satisfied that you can carry out your assigned role and mission, knowing that the Soviets will have during that same period as far as an overall military capability is concerned?

Admiral COMBS. In the overall; yes, sir.

Now certain areas that I discussed here a little bit ago, I think we could have improvement, we could have considerable improvement, and I think by these improvements it would increase our overall capabilities.

Senator JACKSON. I don't know whether this next question would be a fair one.

Maybe I will ask it and then I might withdraw it.

Referring now to an air atomic surprise attack by the Soviets, knowing all of the delivery systems to retaliate that we have within the Department of Defense, do you think in the period 1958–60 we could cope effectively with a surprise air atomic attack by the Soviets?

I will leave that question and we can close on that one because it goes into the other services.

Admiral COMBS. It does indeed and I hesitate to try to make any statements that have to do with services other than my own, because I am not qualified to answer for them.

Senator JACKSON. Let's just leave that question then and maybe we can go back to it sometime.

NAVY TO ATTACH TARGETS OF NAVY INTEREST

Admiral COMBS. Our target assignments are predicated on the hitting of targets of naval interest, the targets which will do damage to us if they are allowed to continue.

Senator JACKSON. You want to get the airfields from which the Soviets can attack our naval forces? (D)

Admiral COMBS. Yes, sir.

Senator JACKSON. Also you want to destroy the naval installations of every kind, nature, and description in general?

Admiral COMBS. Particularly the submarines; yes, sir.

Senator JACKSON. I am just giving you the shotgun question.

All kinds, submarine pens——

Admiral COMBS. Shipyards.

Senator JACKSON. Shipyards, naval ports, Soviet naval dispositions of all kinds?

Admiral COMBS. Yes, sir. (D)

Senator JACKSON. I think that is all.

The committee will stand in recess until 2 p. m. tomorrow in room 457.

(Whereupon, at 4:50 p. m., the hearing was adjourned, to reconvene at 2 p. m., Thursday, June 7, 1956.)

STUDY OF AIRPOWER

THURSDAY, JUNE 7, 1956

UNITED STATES SENATE,
SUBCOMMITTEE ON THE AIR FORCE
OF THE COMMITTEE ON ARMED SERVICES,
Washington, D. C.

The subcommittee (consisting of Senators Symington, Jackson, Ervin, Saltonstall, and Duff) met, pursuant to recess, at 2:00 p. m., in room 457, Senate Office Building, Senator Stuart Symington (chairman of the subcommittee) presiding.

Present: Senators Symington, Saltonstall, and Duff.

Also present: Fowler Hamilton, general counsel; Ramsay D. Potts, Jr., associate general counsel; Fred B. Rhodes, legal consultant to Senator Saltonstall; Edward C. Welsh, assistant to Senator Symington, and Wallace L. Engle, staff member.

Vice Adm. Thomas S. Combs, USN, Deputy Chief of Naval Operations (Air); Brig. Gen. Ronald D. Salmon, USMC, Assistant Director, Division of Marine Aviation, Office, Chief of Naval Operations; Vice Adm. Ruthven E. Libby, USN, Deputy CNO for Fleet Operations and Readiness; Rear Adm. Rawson Bennett, USN, Chief of Naval Research; Rear Adm. W. A. Schoech, USN, Assistant Chief, Bureau of Aeronautics for R. and D.; Rear Adm. A. M. Morgan, USN, Assistant Chief, Bureau of Ships, for Ship Design and Research; Brig. Gen. Thomas C. Musgrave, Jr., USAF; Rear Adm. C. D. Griffin, Office, Chief of Naval Operations; Rear Adm. S. S. Russell, Chief, Bureau of Aeronautics; Capt. F. Massey, USN; Capt. S. R. Brown, USN; Capt. T. F. Connolly, USN; Capt. S. S. Searcy, USN; Col. Donald S. Bussey, ODCSOPS, DA; Mansfield Sprague, General Counsel, Department of Defense; Capt. Dawson, USN; Capt. R. Y. McElroy, USN; Capt. F. A. McKee, USN; Comdr. W. W. Suydam, USN; Capt. E. C. Outlaw, USN; Comdr. D. J. Veazey, USN; Comdr. S. E. Wagenhals, USN; Comdr. J. F. Schremp, USN; Capt. C. E. Robertson, USN; Capt. Edwin Hooper, USN; Comdr. M. F. Weisner, USN; Comdr. E. A. Luehman, USN; Comdr. S. H. MacGregor, Jr., USN; Comdr. R. E. Warner, USN; Comdr. M. E. Haller, USN; Comdr. J. S. Elkins, USN; Comdr. R. D. Macklin, USN; Lt. Theodore P. Hartney, USN; Lt. Harold F. Griffith, USN; William W. Edwards, Comptroller, Office of Naval Research; R. K. Buchanard, Office of Naval Research; and Comdr. T. R. Ingham, Office of CNO, Department of Navy.

Clark A. Morgan, OSD Security Office; Bernard S. Bogdanowicz, OSD, Security Office.

Senator SYMINGTON. Admiral, good afternoon to you.

We will now call together this executive session of the Senate Subcommittee on the Air Force of the Senate Armed Services Committee.

Are there any witnesses that you plan who are not sworn?

Admiral COMBS. Not as far as my presentation is concerned. There are other people here this afternoon, Mr. Chairman, but they follow along in other sections of this.

Admiral GRIFFIN. We are prepared this afternoon, sir, in accordance with conversation with counsel, to put on a personnel presentation following your interrogation of Admiral Combs, and then an R. and D. presentation, sir.

Senator SYMINGTON. Fine. In the meantime I think counsel has some questions, am I right?

Mr. HAMILTON. Yes, I have a few I would like to ask for clarification.

SITUATION OF CARRIERS IN PORT

Admiral, I believe yesterday part of the testimony related to the situation that would exist in respect to the Mediterranean Fleet as of that date. The testimony with respect to the Far Eastern Fleet related to the situation as of April 1; in order to clarify that, I would like to ask if I am right in my impression that, as of April 1 with respect to the Mediterranean Fleet, it happened on that day that the two carriers in the task force were in port; is that right, sir?

TESTIMONY OF VICE ADM. THOMAS S. COMBS DEPUTY CHIEF OF NAVAL OPERATIONS (AIR), UNITED STATES NAVY—Resumed

Admiral COMBS. That is correct; yes, sir.

Mr. HAMILTON. I wonder if it would be possible for you to apply for the record, so that an adequate comprehensive picture would be given—not just for one particular day—the positions of the carriers in the Mediterranean Fleet and the Far Eastern Fleet with respect to whether they were at sea or in port during some representative period, whatever you would think would be a representative period, if I make myself clear.

Admiral COMBS. Yes, sir; we can do that, and work up the problem for that representative period.

Mr. HAMILTON. I don't think it would be necessary to work up the problem. I just did not want the record to show only that on April 1 you had 2 carriers, as I recall it, in the Mediterranean Fleet in port and 2 of the 4 in the Far Eastern Fleet in port. It would seem to me that the record, to be comprehensive, should cover the situation for some representative period, whatever one you and your colleagues think would be representative.

Admiral COMBS. Yes, sir; we can do that.

(The material requested has been supplied to the committee in classified form.)

Mr. HAMILTON. In that respect, when the carriers are in port, do you have air cover?

Admiral COMBS. No, sir; not in peacetime, not our own air cover.

Mr. HAMILTON. You rely upon the defense facilities in the area?

Admiral COMBS. Of the area; yes, sir.

Mr. HAMILTON. In other words, if they were in Naples you would rely upon whatever NATO or whatever Italian force there might be in the way of warning for defense. Is that correct?

Admiral COMBS. Yes, sir.

FIGHTER DEFENSE

Mr. HAMILTON. Now, turning for the moment to another question, would the Navy have made any studies or have any information as to the kind of fighter defense you might expect if you were making an attack from off Sicily against the targets in the satellite countries that you described yesterday, in terms of the number and types of planes that you might encounter?

Admiral COMBS. That is naval intelligence, sir, which is available. They have their estimates of the bombers and of the fighters on these fields that we discussed yesterday.

Mr. HAMILTON. Well, if you care to do it, I think it might be helpful for completion of the record if you could supply a statement of that. It would just be representative, not in great detail.

Admiral COMBS. Yes, sir.

(The information requested has been supplied to the committee in classified form.)

Mr. HAMILTON. And also I wondered, since you were able yesterday to give us an indication of the types and the general range of the targets that the Mediterranean Fleet would strike in the event of a sudden, all-out war from its position in Corsica, if you could give us similar information for the record as to the targets that the Far Eastern Fleet would strike, assuming they were based where they were, in your hypothetical instance as of yesterday, which as I recall it was behind the lip of the islands that run up——

Admiral COMBS. To the eastward of Okinawa. Yes, sir, we can supply them.

(The information requested has been supplied to the committee in classified form.)

Mr. HAMILTON. Now the testimony yesterday I believe indicated that the Navy's responsibility for land targets was in general for those targets which were of naval interest; is that correct? (D)

NAVY LAND TARGETS ARE THOSE OF NAVAL INTEREST

Admiral COMBS. Yes, sir. The targets assigned by the Joint Chiefs of Staff to the Navy are in general targets of naval interest. They include airfields because it is from those airfields on the periphery that the most probable attack on our forces would come. (D)

Mr. HAMILTON. That was my impression.

Admiral COMBS. Yes, sir. (D)

Mr. HAMILTON. That is a correct impression?

Admiral COMBS. Yes, sir.

Senator SALTONSTALL. Will the counsel yield?

Mr. HAMILTON. Yes, sir.

Senator SALTONSTALL. Are the Navy targets confined to that type of target? I did not so understand.

Mr. HAMILTON. That is what I was trying to clear up in the record.

Admiral COMBS. My specialist here advises me that the targets that we have assigned to us are in general of naval interest, unless otherwise ordered by the Joint Chiefs of Staff. (D)

Mr. HAMILTON. Of naval interest? (D)

Admiral COMBS. Chiefly naval installations and ports, plus airfields which pose the greatest threat of attacking our forces. Is that clear, sir? (D)

Mr. HAMILTON. Yes, sir. (D)

QUESTION OF WHETHER NAVY EXPECTS TO HANDLE ANY PART OF 137-WING AIR FORCE MISSION

Senator SYMINGTON. May I ask a question, there, Admiral?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. As mentioned previously, the original reason for these hearings was an effort to find out our Air Force capabilities vis-a-vis the air force of the Russians, and the second reason was whether the Air Force was getting enough funds in order to have a true, 137-wing Air Force as had been promised to the American people.

Now the hearing has gone forward as we have discussed. But let me ask you this question. Has anybody at any time suggested to you that it was not necessary to have the 137-wing Air Force which was the decision of the current Joint Chiefs of Staff, made some time in the year 1953?

Has anybody suggested to you that that was not necessary because the Navy itself would handle part of the mission which would have gone to the 137-wing Air Force?

Admiral COMBS. No, sir; that has never been mentioned at any time.

Senator SYMINGTON. Have you ever had anybody attempt to justify to you or to the Navy in any way the lack of the Navy that had been planned on the grounds that one or the other services could do the job?

Admiral COMBS. No, sir.

Senator SYMINGTON. Do you know of any discussion at any staff level or at any level about the fact that the Navy could handle the assigned missions of the Air Force or the Air Force could handle the assigned missions of the Navy?

Admiral COMBS. That has never been discussed in my presence, Mr. Chairman.

Senator SYMINGTON. Would you see if there have been any discussions of that character? Would you ask your superiors in the Navy and have for the record here a letter from the Chief of Naval Operations or the Secretary?

The counsel presents the fact that they will be witnesses later in these hearings, so I withdraw that request. (D)

NAVY'S ROLE TERMED VERSATILE

Mr. HAMILTON. Then, turning to another question, Admiral, would you care to comment on a matter that you and I have discussed as to the Navy's capability and role from the standpoint of its airpower, in the event of a peripheral or nongeneral war?

Admiral COMBS. Yes, sir. The Navy is alert to the needs for nuclear offensive and defensive capabilities.

I believe that my previous testimony supports this contention, but we must also be alert to the other broad alternatives available to the Soviets.

The events of the past 6 years prove, I believe, that the Soviets recognize these alternatives. The Navy represents an active, ready deterrent to these alternatives just as it represents a powerful deterrent in the field of nuclear warfare.

The keynote of our attack philosophy is versatility.

We must have forces with an attack capability effective for all the demands of present-day world situations.

We must be ready for small wars and limited campaigns.

As I have mentioned, we carry in our ships a full family of weapons. I should point out that in a small war the volume of attack with conventional weapons or small-yield atomic weapons assumes significant importance. (D)

To meet these varied conditions, we have available many light attack aircraft with a high sortie rate for the precision delivery of weapons.

If a limited campaign should suddenly evolve into a general nuclear exchange, our forces are equally capable of launching atomic strikes against the enemy.

This capability prevents a gap in the Nation's attack potential. In the Navy we are able to concentrate a strong offensive force at a place of our own choosing at the time we may select.

In followup actions subsequent to an all-out atomic exchange, or in limited war, this capability becomes most important.

The Navy—and this includes the United States Marine Corps—is the only military organization available to the United States Government which is capable of being employed effectively in a wide variety of military situations in which the United States may become involved.

Mr. HAMILTON. Thank you very much, sir. That concludes my examination.

Senator SYMINGTON. Senator Saltonstall?

Senator SALTONSTALL. I have no further questions.

Senator SYMINGTON. Senator Duff?

NAVY COULD HIT OTHER TARGETS WITHIN RANGE OF ITS AIRCRAFT

Senator DUFF. There is one point that I would like to continuously emphasize, by reason of the fact that in public minds the idea is that if the Soviet has the capability of destroying our cities—we don't hear so much talk about what they are going to do about targets.

We hear talk about what they are going to do in the destruction of our cities, and I think that the testimony has been that the Navy has the capabilities of hitting cities as well as targets if the war plans ultimately indicate that that would be necessary under the circumstances; is that correct, sir?

Admiral COMBS. Yes, sir, that is correct within the capabilities of our range. (D)

QUOTATIONS FROM FIELD MARSHAL MONTGOMERY

Senator DUFF. Thank you.

Senator SYMINGTON. Yesterday, Admiral Combs, Senator Duff asked the following question. He said:

> There are two questions that I would like to ask if I may. Field Marshal Montgomery recently made the comment that in his judgment after the first

blows of the surprise attack had fallen, that the Navies alone might remain undamaged and be able to carry on the battle.

Would you care to comment on that as coming from landbased operations?

And you replied:

I agree with it, sir. I think there is a good possibility that that might happen.

Now some believe this was not the whole story of what was said. I presented that to Senator Duff, and asked him if he would mind if I asked questions against that paragrpah and the paragraph in front of it; also the paragraph behind it. The Senator has said he would have no objection.

I would be glad to yield to the Senator.

Senator DUFF. Well, I was not purporting to make an exact quotation. I was saying the substance of what he said, and I have no objection whatever to your reading the exact quotation.

Senator SYMINGTON. I thank the Senator. As usual, he is very fair. I feel I should, based on the request that has come to us.

Admiral Combs, I would like to ask you these questions paragraph by paragraph or perhaps sentence by sentence. I will repeat them if you like, because it is a statement with a lot of different thoughts.

Admiral COMBS. Yes, sir.

Senator SYMINGTON. On October 12, 1955, in an address delivered by Field Marshal Montgomery to the Royal United Service Institution entitled "Organization for War in Modern Times," page 11, Field Marshal Montgomery says, and I quote:

Navies will escape damage additionally so long as the fleets are at sea and suitably dispersed.

Do you agree with that?

Admiral COMBS. I would agree to that, yes, sir.

QUESTION OF VULNERABILITY VERSUS CARRIER'S STRATEGIC IMPORTANCE

Senator SYMINGTON. Montgomery continues:

If they are to escape detection and damage, it is important they should not constitute too great a strategic threat to the enemy.

Would you agree with that?

Admiral COMBS. I think, Mr. Chairman, that we have to think particularly of what is strategic importance.

If the whole striking power of the United States was invested in the fleets at sea, they would be of tremendous strategic importance, and they would have to be searched out and hit.

Now that is not the case. So there is a question in my mind as to the amount of attention the Russians would pay to the fleets at sea versus the tremendous power of the other forces available to the United States. (D)

Senator SYMINGTON. But as he says:

If they are to escape detection and damage it is important they should not constitute too great a strategic threat to the enemy.

Without in any way attempting to lead you, I would suggest that your previous testimony might make you disagree with that statement?

Admiral COMBS. No. I remember my previous testimony, sir, and it was with Senator Saltonstall I believe. He asked if I did not feel that probably the attack would bypass the fleet because of more important targets.

I had to say, and I did say, that in my own mind I thought that the fleet was a strategic target, and therefore would be hit.

Senator SYMINGTON. I think that perhaps we are both saying the same thing.

Admiral COMBS. I think we are, sir, because this puts it in the negative and mine was in the positive I believe.

Senator SYMINGTON. My impression is that you might interpret what Field Marshal Montgomery says, "Don't make your fleet too much of a threat, else it will be searched out and damaged."

Admiral COMBS. That is exactly what I tried to convey yesterday.

Senator SYMINGTON. And I think you would want to agree with that? Let me read it again.

Admiral COMBS. Please read it again. Maybe I talked too fast.

Senator SYMINGTON. Listen carefully please.

Navies will escape damage additionally so long as the fleets are at sea and suitably dispersed. If they are to escape detection and damage it is important that they should not constitute too great a strategic threat to the enemy.

I interpret the word "strategic" there as all-out capacity in the way of retaliation. (D)

Admiral COMBS. We could not agree to hold the fleet striking power down in any way just simply to avoid damage.

There is just no doubt about that.

Senator SYMINGTON. I would think so. Now let me proceed with Montgomery's comments:

The fleets at sea in being may therefore be the only undamaged echelon in the Armed Forces after the initial clash.

Do you agree to that?

Admiral COMBS. I think so, yes, sir.

Senator SYMINGTON. I think that is what you said yesterday.

Admiral COMBS. Yes, sir.

FLEET MUST BE DEFENDED AGAINST ATTACK

Senator SYMINGTON. Montgomery continues:

Later they will be found and attacked. It is essential they should survive such an attack and be available to help the rapid recovery of the situation on land.

Do you agree to that?

Admiral COMBS. I agree that they have got to defend themselves and escape attack, and I agree that they are there to help in any way they can at that very critical time.

Senator SYMINGTON. His next statement:

I believe that the correct organization of naval forces may well be an important factor in helping to tip the scales in our favor.

Do you agree to that?

Admiral COMBS. Yes, sir.

CONTROL OF SEA IS NAVY'S PRIORITY TASK

Senator SYMINGTON (reading):

Control of sea communications will always remain the priority task for naval forces, the main threats being air and submarine attack.

Do you agree to that?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. May I say, Admiral, these are pretty fundamental questions, so at any time you want to discuss it with your staff please do so.

QUESTION OF BIG VERSUS SMALL CARRIERS

Now this one in Montgomery's speech: "I suggest the day of the big ship is over"—do you agree to that?

Admiral COMBS. No, sir.

Senator SYMINGTON. Neither do I. Montgomery continues:

As I have already stated, navies will always need vessels from which to operate aircraft. In the future I see these ships being smaller and faster than the present aircraft carrier.

Do you agree to that?

Admiral COMBS. No, sir; I cannot agree to that, unless we have a tremendous breakthrough in technology where we can do so much more than we can now with smaller airplanes.

Senator SYMINGTON. Well, fundamentally your answer to that is unqualifiedly, "No"; is it not?

Admiral COMBS. Yes, sir.

Senator SYMINGTON. Montgomery goes on:

Navies require aircraft for locating and destroying submarines and for the defense of fleets at sea.

Admiral COMBS. That is correct; yes, sir.

Senator SYMINGTON. He went on:

So far as we can see at present, aircraft cannot be operated economically or efficiently in midocean against submarines or indeed against raiding cruisers unless some form of floating airfield can be provided there.

Admiral COMBS. I agree with that, sir.

Senator SYMINGTON (reading):

For these reasons there may always be a need for vessels from which to operate aircraft.

Admiral COMBS. I agree with that; yes, sir.

Senator SYMINGTON. And then:

But with progress in vertical takeoff and landings we should aim to design something smaller and cheaper than the present aircraft carrier.

Admiral COMBS. If those airplanes which he is talking about can properly do the job, I will agree, but I will not agree that we give up the present sized carriers until we have something in hand to that effect.

Senator SYMINGTON. The last sentence—and I will read it to complete the record:

We could then dispense with the present form of aircraft carrier which is very expensive.

I won't ask you to comment on that.

All war materials are expensive.

Admiral COMBS. That is right; yes, sir.

Senator SYMINGTON. Tanks, submarines, carriers, planes, everything else. But I felt it would be proper to place all this in the record.

Senator Duff did not give it to us in direct quotes; but what he said is almost identical to what was stated by Field Marshal Montgomery.

Nevertheless, there were additions to it which came after his reference, so I felt it would be fair and proper to ask you on Montgomery's whole thought, in addition to the one sentence.

Mr. Counsel, have you any further questions you would like to ask Admiral Combs?

Mr. HAMILTON. No.

Senator SYMINGTON. Senator Duff?

Senator DUFF. Yes, a question or two.

PART OF FLEET DEPLOYED

Admiral, it is my understanding that in view of the fact of not exposing too much of your force you deploy only a part in the forward areas. Is that correct, sir? (D)

Admiral COMBS. That is one reason, sir.

Senator DUFF. And therefore even if the part in the forward areas did suffer a major attack, you would still have in reserve the other part that had not been in the forward areas? (D)

Admiral COMBS. We would have those available to carry out our war plans; yes, sir.

Senator DUFF. That is all.

Senator SYMINGTON. Admiral, is this going to end our pleasant discussions?

Are you going to give the next briefing yourself?

Admiral COMBS. No, sir; my period of briefing, Mr. Chairman, is over. I will turn this over now to the specialists in personnel and in research and development.

APPRECIATION

Senator SYMINGTON. On behalf of the Chair and the committee I want to thank you for a very fine job.

Admiral COMBS. Thank you, sir.

Senator DUFF. And I would like to add, sir, that I think you have given a very wonderfully clear, concise, and comprehensive picture.

Admiral COMBS. Thank you, Mr. Duff.

Admiral GRIFFIN. Mr. Chairman, our next witness is Captain Martineau, who will give a briefing on the subject of personnel, sir, if that meets with your wishes.

NAVY SURFACE-TO-SURFACE MISSILES IN THE FUTURE

Senator SYMINGTON. Admiral, as I understand it, you have here a chart of the Navy surface-to-surface missile, target coverage assumptions. (D)

Will you describe this chart as you see fit, having in mind that we are making a record and that the record will not show either the colors on the chart or the chart itself?

Admiral GRIFFIN. This chart represents arcs which are struck from various points. (D)

Mr. HAMILTON. Admiral, I wonder if you would mind describing the land mass that is depicted on that chart?

Admiral GRIFFIN. The Eurasian land mass. It indicates that with a 1,500 nautical mile range in the missiles, all of Eurasia except a portion in the central section is covered.

Mr. HAMILTON. Could you indicate anything as to the size of the area that is not covered as to its importance from the strategic target standpoint?

Admiral GRIFFIN. I am afraid I am not qualified to answer that question.

Mr. HAMILTON. I notice that that chart is only classified as confidential. In view of that fact, might it be possible for you to supply us with copies of it in the record?

Admiral GRIFFIN. Yes, sir.

(The chart requested has been supplied to the committee in classified form.)

Mr. HAMILTON. Is it the view of the Navy research and development people that within some period of time in the future it will be possible to develop and place in operational units missiles that can attack targets within that area from submarines, under the conditions you have described, with a relatively high or efficacious degree of accuracy?

Admiral GRIFFIN. That is correct.

Mr. HAMILTON. What period of time approximately?

Admiral GRIFFIN. We are going to have a research and development presentation on this.

Mr. HAMILTON. Fine. I will defer my questions.

Admiral GRIFFIN. On research and development.

Captain MCKEE. I am Captain McKee. I have previously been sworn. If I understand the question correctly, with regard to the capabilities required to meet the requirements of this chart, the IRBM, also under development by the Navy in conjunction with the Army, will reach into the 1,500-mile range. (D)

Senator SYMINGTON. The 1,500-mile missile is the JUPITER; is it not?

Captain MCKEE. That is the JUPITER.

Senator SYMINGTON. What you say there, looking at the chart, is that at least 90 percent of the Eurasian land mass would be covered by a 1,500-mile missile, if its launching capacity was 100 miles offshore. Is that correct?

Captain MCKEE. This is correct, sir.

Senator SYMINGTON. And that would be from a submarine, or from any other form of launching platform you might have, if you could get in that close?

Captain MCKEE. That is correct; from either submarine or surface ship.

Mr. HAMILTON. And would you have a guidance system that would enable you to achieve a satisfactory degree of accuracy, even though the IRBM were launched from a ship which would be subject to motion because of the waves and other factors?

Captain MCKEE. Yes, sir. (D)

Mr. HAMILTON. Even though the missiles you have just described were launched from a submarine which is subject to the motion of the waves?

Captain MCKEE. Even though launched from that type of a platform.

Mr. HAMILTON. Thank you, Captain.

Senator SYMINGTON. Senator Duff? (D)

Senator DUFF. When is it supposed that the Jupiter missile will be operational?

Captain MCKEE. First operational use, not for some years. (D)

NO BASIS FOR DOUBTING SOVIET MISSILE CAPABILITY

Senator SYMINGTON. Captain, one other question.

As we know, the Russians are concentrating on missiles.

They talk a lot about missiles in the press and on their radio—I believe last year or the year before I put in the Record some of their talk about twin-stage rockets, out of their broadcasting.

Now if we have plans for a period when we believe we can do this, we can expect that at a period they also can do it, can we not?

Captain MCKEE. There is no reason in my mind to expect that they cannot develop similar weapons.

Senator SYMINGTON. In other words, our success would depend upon their defense and their success would depend upon our defense. Would that be a fair statement?

Captain MCKEE. In principle, yes, sir.

Senator SYMINGTON. What do you mean in principle?

Captain MCKEE. Well, there are matters related to the contest between offense and defense other than technological. When we get down to trading blows, it is a matter of strategy, tactics, and logistics.

If he does not happen to have his forces in the line of approach, he can have all the technical competence and capability that he needs but it won't do him much good.

Senator SYMINGTON. I see what you mean.

But at least he could have the equipment to do the job against our defenses, if he worked on it. He has just as much chance as we to produce the equipment to do the job. Then it would be a question of exploiting whatever he had; would it not?

Captain MCKEE. That is correct.

Admiral GRIFFIN. Is that all, sir?

Senator SYMINGTON. Admiral Griffin, yesterday we asked some questions of Admiral Combs. At one point we said that, if you and Admiral Russell would be available, we would ask you some questions.

Would you like to proceed along those lines?

Admiral GRIFFIN. At your pleasure, Mr. Chairman.

Senator SYMINGTON. Perhaps we had better do this.

I think it would be better if we got the personnel briefing. We would then have more knowledge of what to ask.

We would like to follow the same line of questioning. Is that all right?

Admiral GRIFFIN. Yes, sir; that will be perfectly all right.

Senator SYMINGTON. How long will this next briefing be?

Captain MARTINEAU. About 40 minutes. The briefing itself will be about 25 minutes.

Senator SYMINGTON. Thank you.

Will you proceed, Captain?

Admiral GRIFFIN. I think, Captain Martineau, Mr. Chairman, and Captain Guest have not been sworn, sir.

Senator SYMINGTON. Will you raise your right hands, please. Do you solemnly swear that the information you give this Subcommittee on the Air Force of the Senate Armed Services Committee will be the truth, the whole truth, and nothing but the truth, so help you God?

Captain MARTINEAU. I do.

Captain GUEST. I do.

CAPT. DAVID L. MARTINEAU, OFFICE OF LIAISON, BUREAU OF PERSONNEL, DEPARTMENT OF THE NAVY

Captain MARTINEAU. Mr. Chairman, I am Capt. David Martineau and I am representing the Chief of Naval Personnel this afternoon. The purpose of this presentation is to develop the following points regarding the Naval personnel picture:

1. The overall utilization of personnel in the Navy.
2. Certain features of particular importance and sensitivity.
3. Some areas of difficulty.
4. Present trends to show how we are doing.

NAVAL AIR INCREASING IN IMPORTANCE TO NAVAL OPERATIONS

The Navy, with its completely integrated naval air, is a vital and inseparable element of our national air power. Naval air has become increasingly essential to nearly every type of naval operation.

The operating and the supporting forces are organized and maintained on this basis. This is clearly reflected in the distribution and utilization of personnel.

This chart shows how all personnel in the Navy are distributed as between the operating forces and the support forces.

33 PERCENT OF OPERATING FORCES PERSONNEL IN AVIATION

Of the 397,000 officers and men in the operating forces, 33 percent are exclusively engaged in aviation duties.

The remaining 67 percent are engaged in other duties, but related to naval air in varying degrees.

45 PERCENT OF SUPPORT FORCES PERSONNEL IN AVIATION

Of the 281,000 officers and men in the support forces, 45 percent are exclusively engaged in aviation.

The Marine Corps air arm in the operating forces consists of 40,000 officers and men with an additional 13,000 in the support forces.

22,500 PILOTS AND 10,000 AIRCRAFT

During Fiscal Year 1957, the number of Navy pilots will average 18,100; Marine Corps pilots, 4,400.

The Navy during the next year will operate and support some 10,000 aircraft and some 1,000 ships.

READY AIR RESERVE

The Ready Air Reserve is an important force in being. It is organized and trained so that the various reserve air squadrons can join the fleet operating forces as operating units ready to go.

The Ready Air Reserve of the Navy numbers some 40,000, including 7,500 Reserve pilots. The Marine Air Reserve numbers 21,000, including 1,800 pilots.

Now as to the utilization of officers, all active duty officers in the Navy are divided into two main categories—the line and the specialists. The line officer is one who is trained to exercise command of combatant ships and aircraft.

INCREASING PERCENTAGE OF OFFICERS IN AVIATION

Of the 49,600 active duty naval line officers, 48 percent are either qualified pilots or others engaged exclusively in aviation. The remaining 52 percent of the line officers have duties related to aviation in varying degree.

With the increasing emphasis on naval air, the ratio of aviation officers has increased from 40 percent to 48 percent since 1954, whereas the ratio of other line officers has recreased from its former 60 percent proportion to 52 percent.

SHORTAGE OF SPECIALISTS

24,200 specialist officers on active duty include the various staff corps, such as physicians, dentists, and other technical specialists.

In fiscal 1957 there will be an estimated 11 percent shortage.

Senator SYMINGTON. Why did you leave out the Marine Corps pilots?

Captain MARTINEAU. Because I had already mentioned the 4,400 Marine Corps pilots, sir.

In fiscal 1957, there will be an estimated 11 percent shortage of pilots below the actual requirement. This shortage has increased from 8 percent in fiscal year 1956.

INCREASING REQUIREMENT FOR PILOTS

While the number of pilots on board continues to increase, the pilot requirements have been increasing faster.

The current increase in requirements has been due largely to the assignments given the Navy in continental air defense.

The present pilot shortage is being partially covered with nonpilots who are qualified in certain air specialties. The best solution to this shortage is to retain experienced Naval Reserve pilots on active duty for longer periods.

Now the next chart deals with high points of the present officer situation.

46 PERCENT OF ACTIVE-DUTY OFFICERS ARE REGULARS

The officer situation in the Navy is basically sound, especially considering the expanded active-duty strength. Forty-six percent of the active-duty officers in the Navy in fiscal 1957 will be Regular career

officers. This represents a good balance between regulars and reserves.

Assuming a continuation of the present size military force, the President and the Secretary of Defense have determined that the proper ratio of Regular officers should be 50 percent in each of the services. The Navy is moving steadily toward this goal in accordance with its long-range plan.

SHORTAGES

There are two principal problems in the officers corps: (1) The shortage of pilots and

(2) the shortage of experienced officers with 4 to 10 years' commissioned service.

Each of these problems can be alleviated by retaining on active duty greater numbers of Reserve officers who complete their obligated service. At the present time, too few of these officers are volunteering to remain on active duty.

REMEDIAL ACTION

There are several important legislative items now before the Congress which, if enacted, will go far toward remedying that situation. These include all of the career incentive measures that were the subject of a special letter to the Congress from the President of the United States on April 9.

These are all measures needed to improve and broaden the career prospects for both officers and enlisted men.

Congressional action has already been completed on two of these measures; increased career incentives for doctors, and improved medical care for dependents of service personnel.

Foremost among the uncompleted items is the survivor benefits bill now pending before the Senate.

Among the other important measures that will help in attracting more officers to remain on active duty are:

The augmentation bill that will provide continuing authority for Reserve officers to transfer into Regular status, and the legislation to provide severance pay to reservists.

Still under study in the Navy and Defense Department is a plan to authorize contract bonuses for reservists who agree to remain on active duty for stipulated periods.

REENLISTMENT PROBLEM

Now as to enlisted experience levels, this chart indicates the experience level of the 584,000 active-duty enlisted men in June of 1956. At the present time, some 210,000, or 36 percent of the total, have 4 or more years of naval service.

The remaining 64 percent are in their first enlistment, with less than 4 years' service.

Those with 4 or more years' service can be referred to as a career group. They continue to reenlist at an average rate of about 90 percent. In some of the more critical skills however this average rate is lower.

The reenlistment rate of those completing their first 4-year enlistment is presently averaging only 10 percent. While this represents an increase over the past 2 years, it is below what it should be.

The proper proportion of those having 4 or more years' service should be between 45 and 50 percent. This can be attained by increasing the reenlistment rate among the first-cruise men to 25 percent.

Now let us examine the number of petty officers within our 584,000 total enlisted strength. In June of this year, 52 percent of the total enlisted strength will be in the petty-officer grades.

The ideal proportion of petty officers is 58 percent of the total enlisted strength. We are slightly below that requirement, but are up to total budgeted strength for fiscal year 1956.

Since only 36 percent of all enlisted personnel have 4 or more years of service and 52 percent are petty officers, it is evident that about 30 percent of all petty officers are in their first enlistment with less than 4 years' service.

At the present time, only 1 in 10 of those petty officers in their first enlistment are reenlisting for a second term. This fact alone is a good indication of our overall retention problem and loss of skilled personnel.

What is a Navy petty officer? He is an enlisted man properly qualified in 1 of the 62 basic technical skills. With this technical qualification, he must also combine requirements for military authority and leadership. In the Navy, it is necessary that a petty officer represent a combination of both technical and leadership requirements.

Every man in the Navy must be able to hold a dual status when serving aboard ship. He must be able to do his technical job required for normal operation and maintenance. He must also be qualified to carry out the duties and requirements of his assigned battle station.

A man can be promoted to a petty officer grade only by meeting the prescribed standards in his particular skill. This he must demonstrate in navywide competitive examinations that are conducted simultaneously at all ships and stations twice annually. Appropriately weighted factors reflecting his leadership qualities and service record are then applied to determine his final multiple.

GREATEST PERSONNEL REPLACEMENT JOB IN NAVY HISTORY

During the past fiscal year, the Navy has had to weather the greatest personnel replacement problem in its history. Despite this, 52 percent of the year's-end strength will be in petty officers. This is a major achievement. It reflects great credit on the petty officers themselves and on those who helped to train and develop them.

As to technical training, this chart shows the manner in which enlisted men are trained in a particular technical skill. Aviation electronics has been selected because it calls for the longest school training during the first enlistment period.

Every new man entering the Navy gets 9 weeks' special recruit training. During this period, he is given various aptitude tests to determine the particular skill in which he can be most effectively trained. This is followed by another 8 weeks at basic air school for those going into naval aviation.

Then, those who have been selected for further technical training enter their particular school—in this case aviation electronics, currently a 28-week course.

TRAINING

The length and curriculum of these schools is constantly under study in the light of fleet requirements. It is important that a man receive sufficient technical training to enable him to be useful on the job. But it is equally important that this initial training not be extended beyond the time necessary to prepare him for fleet service.

An inordinate amount of school training delays unnecessarily his arrival in the fleet and reduces the amount of his productive period during his first enlistment.

Maximum benefit must be derived from on-the-job training.

The aviation electronic school of 28 weeks presently includes instruction in the maintenance and operation of electronic equipment dealing with radio communication, radar and submarine detection.

On completion of the course, the apprentice, or striker as the Navy calls him, then goes to the fleet where he will continue to progress by on-the-job training, and by specialized package training for particular installations and equipment.

In fiscal year 1957, this course is being modified in order to put the men on the job in the fleet sooner and for longer periods. Basic air school is being reduced to 5 weeks.

Instead of 28 weeks learning 3 electronic fields, the apprentice will spend only 19 weeks learning just 1 of those fields. His qualifications will be narrower, but the fleet will gain in increased productive time.

TECHNICAL SKILLS

Aviation electronics is one of several critical technical skills in which the retention rate is low. Consequently, the training load must be kept high.

At this point, Mr. Chairman, we have a series of charts indicating the situation in each of five selected technical skills in which our retention rate is the lowest.

First, to examine the aviation electronics field we have just been discussing. This chart compares the requirements in this field in the aviation electronics field in numbers of petty officers with those actually on board through fiscal year 1955 and 1956. Between March 1955 and March 1956, the percentage of requirements on board reduced from 74 percent to 59 percent, due largely to an increase in the requirements.

On June 30 of this year, the number of new petty officers will have increased by some 2,000 as the result of the February examinations, and we will have on board 72 percent of requirements.

The average reenlistment rate of first-cruise men was only 6 percent up to November, but it has shown a slight increase since then.

These onboard numbers of petty officers shown do not include strikers, all of whom are at least partially qualified by reason of aptitude and special training. The requirement shortage is partly filled with these strikers.

Now for a glance at the aviation structural and hydraulics enlistment rate.

We have corresponding pictures in some other critical technical skills. In the aviation structural and hydraulic field, during the past year there has been a small reduction in the actual number on board.

At the same time, the requirement has been increased. Newly rated petty officers will have improved the situation by June 30. The reenlistment rate of first-cruise men is 11 percent, and all petty officer grades in this rating is 29 percent.

Now a look at the picture regarding radar men.

Here we see the same picture for radarmen petty officers. Between June 1954 and March of this year, the number of these petty officers reduced from 7,000 to 5,000. But here it was possible to effect some reduction in requirements. Newly rated petty officers will improve the situation by June 30. The reenlistment rate of first-cruise men is low, being only 6 percent, and that of all radar petty officers is 13 percent.

Now the picture regarding boilermen:

In the boilerman rating, there has been a small increase in the onboard number since last September. By June 30, we will be at 75 percent of requirement.

The reenlistment rate of first-cruise boilerman is 9 percent, with an overall petty officer reenlistment rate of 26 percent.

And finally, we have a picture of the aviation electrician.

Since June 1954, there has been a reduction in number of about 1,300 of these petty officers while at the same time the requirement has increased. By this June, the percentage of requirements on board will have increased from 62 to 71 percent. The reenlistment rate of first-cruise men is 10 percent, and overall petty officers, 22 percent.

Most of our highly skilled technical personnel in all ratings are in heavy demand by industry. Consequently, it has been difficult to retain these men in sufficient numbers. The reenlistment rates in a number of these fields are considerably below normal; but there are also clear indications that the downtrend has been stopped, and we are showing some progress.

REMEDIAL MEASURES

Many measures are being taken to improve the situation. In the field of legislation, bills are now pending before the Congress that will substantially improve the conditions of service life for our personnel as well as their families, and should enable us to retain greater numbers of capable people.

Among the administrative measures taken, the Navy has obtained excellent results from its petty officer conversion program to increase the number of technicians in the critical fields. Career petty officers in other less critical fields, who can demonstrate the required aptitude, are being encouraged to shift over into one of the other more critical fields.

Under this program, they are given extensive special technical training, and then rated in their new field.

The important benefits accruing from this conversion program can be seen in the electronics and fire control technician fields; 10 percent of the total requirements have already been met by this conversion program; another 11 percent are currently under instruction.

Thus, 21 percent of the total requirement in this critical field will have been met by retraining career petty officers from other fields. The Navy plans to extend this program in fiscal year 1957.

REENLISTMENT PROBLEM

And now let us look at the reenlistment problem.

This chart shows the Navy's reenlistment experience during the past 2 years. In July of 1954, the reenlistment of both first term and career personnel had dropped far below normal. This was caused by a variety of reasons.

This condition was anticipated. Among the remedial steps taken to effect improvement was the new reenlistment bonus law enacted in the summer of 1954.

In November 1954, the Navy reached its low point when the overall reenlistment rate fell below 10 percent. That of first termers was below five percent. But most alarming was the fact that the reenlistment of career personnel, which normally remains well above 75 percent, had fallen below 50 percent. Following that, the prospects of the pay legislation enacted in March 1955 helped considerably to alleviate the situation. There has been some decline since last November. Nevertheless, the overall reenlistment rate of 32.6 percent as it stood in March, represents a steady improvement over the last fifteen months.

I might add that partial reports for the month of April indicate an overall reenlistment rate of 37 percent.

Further improvements are anticipated following the enactment of the career-incentive legislation now pending before the Congress.

Now for a look at the replacement problem in fiscal year 1956.

REPLACEMENT PROBLEM

During fiscal year 1956 the Navy has been faced with the greatest replacement problem in its history. The abnormally large number of first enlistment expirations (stemming from the Korean buildup) plus normal attrition, produced a total loss throughout the year of 237,000 enlisted men.

In planning how to replace this huge loss, the Navy could only count in advance on reenlisting 56,000 of these, and recruiting 100,000 new men.

It was also planned to bring 30,000 volunteer reservists to active duty for 2-year periods. But to obtain the remaining 56,000 necessary, required that the Navy call upon selective service for the first time in its peacetime history.

As the result of the strong and productive campaign carried on at all levels of the Navy, and with splendid cooperation from many civilian organizations, the planned quotas were exceeded. It was only necessary to call in 30,000 from selective service.

The Navy successfully met this very serious challenge, and will end the year at full personnel strength, 52 percent of which will be petty officers. But the significant fact should not be overlooked that the many highly trained men who failed to reenlist have had to be replaced by new men who, in turn, must be trained in the many skills and specialties. The Navy's reenlistment rate today is below the Armed Forces average.

As can be seen from the chart, the replacement of loss problem will be considerably less in succeeding years.

I might point out, Mr. Chairman, that can be seen from the year 1957 where the losses are only 172,000 as compared to 237,000 this year.

They have reduced further according to plan in fiscal year 1958 as shown by the red column, to 148,000, and we fully expect to meet these replacements with normal means.

REASONS FOR LOSS OF SKILLED PERSONNEL

Now what are the factors causing the loss of skilled personnel? They can be summarized as follows:

The lure of better pay in the civilian economy. It is clearly recognized that nearly all of our skilled personnel are in heavy demand by business and industry.

Traditional military benefits have been surpassed during recent years by industry. This is a key factor. Until recent years, there were important benefits available to military personnel that were entirely unique, and seldom available to employees in private enterprise.

These included a favorable retirement system, medical care for servicemen and their families, adequate housing and various purchasing privileges.

But since the end of World War II, many of these benefits have either been eliminated for the serviceman or they have been surpassed by industry, and at a time when the operational demands on military personnel have been heavier than during any other peacetime period in history.

Inadequate housing: This includes not only that available from the Government, but also the inadequacy and high rentals of privately owned housing, especially in areas of high military concentration.

Current world conditions impose heavy operational and deployment demands on naval personnel. Even during normal periods, naval personnel must be absent from their families for longer periods than in any of the other services. The resulting pressures and personal problems produced in many cases have been important factors in causing men to leave the service.

A factor often overlooked is the current size of the Armed Forces. The present strength of the overall Military Establishment is of such a size that we can hardly expect to maintain ideal proportions of career-motivated personnel. That means that the turnover rate will undoubtedly remain considerably higher than we would otherwise perfer.

REMEDIAL ACTION

Now about remedial action.

Let us look now at the principal remedial actions which have been taken, are in progress, or are planned to assist in solution of our personnel problems.

The reenlistment bonus law of 1954 and the pay increases provided last year have been important factors in the increase in reenlistment rates since their lows of November 1954. The pay increases were on a selective basis stressing career service, and higher rates for

hazardous duty. Also provided were higher per diem rate, and a new dislocation allowance.

The measures just recently enacted to retain career doctors and to provide improved medical care should have far-reaching beneficial effects. Likewise, the other career incentive legislation, particularly the survivor benefits bill now before the Senate, which will provide urgently needed revision of the benefits available to the dependents of personnel who die on active duty.

Other measures in the program include continuing augmentation of Regular officers, separation pay for reservists, fair rental for substandard housing, crediting of Academy and ROTC service, and promotion of nurses.

The subject of increased pay for special skills is of current interest. The Navy strongly endorses adequate pay scales. However, it should be noted that a special committee appointed by the Secretary of Defense is studying this problem now. The recommendations of this committee will undoubtedly be an important contribution to our all-out efforts to curb the excessive rates at which we are losing key personnel.

Under these circumstances, specific recommendation in this field at this time is considered premature.

Senator DUFF. Will you repeat that last, please?

Captain MARTINEAU. Under these circumstances, the circumstances of the matter being studied by the special committee, sir, a special recommendation in this field of special pay at this time is considered premature.

Next, the intense reenlistment and recruiting programs carried out during the year have stepped up enthusiasm and interest in Navy careers.

The continuing revision of in-service training to meet the personnel situation and fleet requirements.

Recent improvements in the seashore rotation particularly for enlisted personnel. Greater consideration is given to the fact that a much larger proportion of our personnel in all grades are married and should have reasonable opportunity for a normal family life.

Continuing improvements in an in-service education. In this connection, a new pilot program has just been inaugurated by the Navy to provide selected career enlisted personnel with an opportunity for college training in their particular technical fields.

Continuing emphasis on better working and living conditions: The Navy continues to place the greatest emphasis on the importance of improving the conditions of service life, both afloat and ashore, for naval personnel and their families. The Navy has led the way in demonstrating the need for such vital carreer incentive legislation as revision of survivor benefits, improved medical care, and officer augmentation.

Finally the renewed emphasis on more effective and inspired leadership at all levels.

NAVY A WAY OF LIFE

In this connection, it should be observed that the Navy is not a business, not an industry, but a way of life. The pay of naval personnel should be reasonable and adequate, but at the same time we cannot expect to attract men to naval careers by pay alone.

Motivation and dedication to service cannot be purchased; rather, they are inspired by the challenge, stimulation, interest, and incentive for a service career.

It is here that leadership is of such vital significance in its influence on so many factors that affect the morale of men and their families as well.

SUMMARY ON PERSONNEL SITUATION

To summarize briefly: The Navy has some difficult and challenging personnel problems, mostly in retaining highly skilled technical personnel.

But progress is being made, very slowly in some cases. Nevertheless, it is progress. And it will be accelerated after the enactment of pending career-incentive legislation.

The Navy is carrying out its assigned missions, but at an austere manning level.

This is being done amid a great transition in weapons and technology and a period of high economic prosperity.

Important help and understanding continue to be received from the Defense Department and certainly from the Congress.

Although there is no complacency in any degree, the Navy faces the future with confidence and determination.

That concludes our formal presentation, Mr. Chairman.

Senator SYMINGTON. Thank you, Captain.

Does counsel have any questions?

Mr. HAMILTON. Nothing, thank you, sir.

Senator SYMINGTON. Senator Duff?

SERVICE CAREER VERSUS PRIVATE BUSINESS

Senator DUFF. Nothing except this general question.

As far as the technicians are concerned, in order to retain them you have got to reasonably approximate similar employment in industry, isn't that true?

Captain MARTINEAU. Insofar as we can; yes, sir.

Senator DUFF. And also the additional benefits in industry of retirement and all those things have got to be reasonably approximated if you are going to make a career out of it?

Captain MARTINEAU. That is right, sir. In some cases those benefits must be exceeded because we cannot expect to pay in the service the salaries that business and industry are able to pay in many cases.

Senator DUFF. In other words, the end of the line has got to have a better appeal even than industry itself?

Captain MARTINEAU. We must make the service career an attractive one in all aspects.

Senator DUFF. That is all.

NAVY EMPHASIS ON AIR

Senator SYMINGTON. Captain, on page 2 you say that the ratio of aviation officers has increased from 40 to 48 percent, with increasing emphasis on naval air.

Does that mean that naval air in the Navy is steadily increasing?

Captain MARTINEAU. It does; yes, sir.

Senator SYMINGTON. In percentage of the total Navy?

Captain MARTINEAU. In percentage of the total Navy and in the percentage of the people who are engagee in it exclusively.

Senator SYMINGTON. And is that being done in your opinion without any sacrifice to the problem of surface ships and submarines?

Captain MARTINEAU. Well, we do have other problems, Mr. Chairman, and we do have other shortages, as I have pointed out, particularly in the younger officers, but those shortages are being caused for the most part from other causes. We do not feel that we are suffering from this increasing emphasis on naval air.

It is being well phased.

SHORTAGES

Senator SYMINGTON. Now you say in fiscal year 1957 the shortage will be 11 percent in pilots, is that right?

Captain MARTINEAU. That is correct, sir. That amounts to some 2,200 pilots translated into numbers.

Senator SYMINGTON. And you say that this present pilot shortage is being partially covered with nonpilots. That does not imply that you are having nonpilots fly airplanes, does it?

Captain MARTINEAU. It does not, sir.

Senator SYMINGTON. It means what?

Captain MARTINEAU. It means that nonpilots who are qualified in certain air specialities, maintenance for instance, and the aviation electronics supervisory jobs in maintenance and operation.

Senator SYMINGTON. I thought you wanted to make that clear.

Captain MARTINEAU. Under aviation intelligence. Under ideal conditions we would prefer those positions be filled by qualified naval aviators. Since we cannot do it we do the next best thing.

Senator SYMINGTON. You say during the past year the Navy has had one of the greatest personnel replacement problems in its history. Is that what you develop later with respect to Korea?

Captain MARTINEAU. Korea was one of the factors involved in that, yes, sir; because in the Korean buildup, we doubled the size of the Navy and the largest number of men entered the Navy in 1952 and their 4-year enlistment expired in 1956.

Many of them were young men who came in, never had any idea of making the Navy their career, but they were patriotic, wanted to serve, and when their time was up they went home.

Senator SYMINGTON. Now you say that with respect to your aviation electricians, you have had a heavy decrease in number and at the same time you have had an increase in requirements.

As I understand it, the chief reason for that is the failure to reenlist resulting from other inducements such as private industry. Is that right?

Captain MARTINEAU. That affects the onboard number; yes, sir. The requirements are of course the actual requirements in the fleet, and the onboard number, the fact that it does not meet requirements, is due largely to the cause that you mention.

Senator SYMINGTON. Your problem follows the problem of the other services?

Captain MARTINEAU. I would say so; yes, sir.

Senator SYMINGTON. You say you are short of people and are short of reenlistments. Presumably that affects your ability to perform

your mission. You say you strongly endorse adequate pay scales. You give the implication that you think the pay scales should include in them those incentives once with the armed services, which have now been lost.

You say "However, there is a committee that will undoubtedly make an important contribution," and that under those circumstances you do not want to make any specific recommendations. Is that the way I follow your testimony, sir?

Captain MARTINEAU. That is right, sir.

A COMMITTEE STUDY ON PAY STRUCTURE

Senator SYMINGTON. So you are willing to let the present pay scales stand. Is that it?

Captain MARTINEAU. Pending the completion of the study by this very well-qualified committee.

Senator SYMINGTON. What kind of a committee is it?

Captain MARTINEAU. It is a committee, Mr. Chairman, comprised of some very distinguished civilians and distinguished military personnel.

Its chairman is to be Mr. Ralph Cordiner, the president of General Electric Co.

Another member will be Mr. Charles Hook who is the chairman of the committee that reviewed the structure in 1949.

Senator SYMINGTON. And when are they going to make their report?

Captain MARTINEAU. They met on June 13 for their first meeting, sir. They are scheduled to make their report in 4 months, and it is expected their recommendations will be translated into legislation, be ready for the next session of the Congress.

Senator SYMINGTON. But without that committee's recommendations, the Navy is not in a position to give us what it thinks is needed in order to correct this type and character of shortage?

Captain MARTINEAU. I would like to amplify that a bit, Mr. Chairman. This matter of pay is an extremely complicated one, and I believe that I can speak to that because I have been very closely associated with the last two major pay revisions of the military pay structure. This is not something that we can come in and do in a very short time.

It requires a careful study and review, and we must be able not only to study it within the military services, but be able to compare it with corresponding skills and responsibilities on the outside.

The point I am trying to make, sir, is that we cannot attack it hastily. It must be done as the result of a careful study and we have no other alternative but to wait until this committee completes its work.

Senator SYMINGTON. Captain, I have heard you on this subject before. You always make a fine presentation.

Do you think the members of this new committee will know more about it than you do, or you know more about it than they?

Captain MARTINEAU. I did not follow that last.

Senator SYMINGTON. Let me put it to you this way.

Mr. Cordiner has been a friend of mine for many years.

Do you think he knows more about the refinements of Navy pay than you do?

Captain MARTINEAU. At this point I know he does not know as much as most people in the military.

Senator SYMINGTON. He is going to be an expert in 4 months?

Captain MARTINEAU. He will be given a large military staff and the complete facilities of the services will be placed at the disposal of the staff and it is expected that everybody will cooperate.

Senator SYMINGTON. In other words, he is really going to take your advice in the matter, is that it?

Captain MARTINEAU. He is going to consider it.

Senator SYMINGTON. I am not much for these committees if they delay doing what it is obviously right to do.

You come here and say you are short of pilots, short of electricians, short of radio technicians, as are the other services; yet you are waiting for a committee to make a recommendation.

I don't quite understand that.

Captain MARTINEAU. Mr. Chairman, I would like to add this: It was only last year that the Congress gave careful consideration to the pay and the Congress passed the pay bill, the cost of which was $730 million.

A PREVIOUS COMMITTEE STUDY

Senator SYMINGTON. Did you have a committee before when you came before the Congress and made your presentation?

Did you wait for a committee, or did you come up here and tell us what you thought was right?

Captain MARTINEAU. That was the result of a committee, sir, the proposal that was brought before the Congress at that time.

Senator SYMINGTON. What was that committee?

Captain MARTINEAU. That was a Service committee that was advised by the chairman of the previous civilian military committee, Mr. Charles Hook, and the recommendations that were proposed to the Congress in 1955 represented the conclusions of the military members of the committee and the civilian advisers.

Senator SYMINGTON. That was a fine committee.

They worked for several years I think, didn't they?

Captain MARTINEAU. No, sir.

The study that represented the last pay bill was commenced in the summer, in the late summer of 1954.

Legislation was presented to the Congress in January and Congress was very prompt in passage.

Senator SYMINGTON. And you think in order to revise it again it is better to wait until you have another committee report?

Captain MARTINEAU. Mr. Chairman, I don't know what else we can do.

Senator SYMINGTON. I am only asking.

Captain MARTINEAU. Yes, sir, I am trying to answer.

Senator SYMINGTON. The members of the new committee, were they on the former committee?

Captain MARTINEAU. Mr. Hook was.

Senator SYMINGTON. Is he still on this committeee?

Captain MARTINEAU. He is a member of this committee.

Senator SYMINGTON. Does he feel there should be a revision?

Captain MARTINEAU. I have not discussed the matter with him, but I think that he will certainly come around to it as soon as he

sees the situation. He has agreed to serve on the committee, so I am sure his interest continues.

Senator SYMINGTON. Is this a committee only for the Navy or all three services?

Captain MARTINEAU. All three services, all of the uniformed services.

Senator SYMINGTON. I do not want to be critical in any way, but I am sure something ought to be done to retain the trained people. Otherwise we have less efficiency and more accidents.

Captain MARTINEAU. We certainly concur in that, Mr. Chairman.

Admiral GRIFFIN. Mr. Chairman, I might add that the Navy is in favor of increased pay. The specifics of it we are not prepared to come up with at this time.

Senator SYMINGTON. Thank you, Admiral.

Senator Duff?

COMPETITION WITH PRIVATE INDUSTRY

Senator DUFF. I have been struck by the fact all the way through that at a time when you are competing with industry, especially in your technical skills, and industry is going to be outbidding you all the time and getting your men, something radical has got to be done about it. If that condition continues to obtain and you are being outbid, you are not going to either receive, or keep those that you already have, in sufficient numbers.

Personally I am in favor of an increase all along the line in order to give you what you have to have.

It is not only in your service; it is in the other services where the technical skills are required that the same conditions obtain. I agree with the Chairman the sooner we can give it to you, the better.

For my part, I am willing to go on record right now in seeing that you get it if I am around here when we have to vote on it.

Captain MARTINEAU. I would like to add, Mr. Chairman, in my own opinion I feel of equal importance to pay is to complete the present career incentive legislation now before the Congress.

Senator SYMINGTON. Well, any additional inducement to work at any job is a form of pay.

Captain MARTINEAU. That is right, sir.

Senator SYMINGTON. And any additional pay is an additional inducement to work at a job.

Captain MARTINEAU. That is right.

Senator SYMINGTON. This is all pretty silly, because actually the taxpayer is paying for all of it.

We had testimony that a man making $240 a month in the Air Force, when his enlistment was over, went to an aircraft corporation, where he makes $1,200 a month. That of course is going to be incorporated as part of the cost of that airplane, so the taxpayer gets rapped a second time.

Then he gets rapped again training the new man; and when this new man leaves in turn he has to train a third man.

The taxpayer has to pay some four times as much to get the service out of the fellow who is getting that industry salary. That does not include any loss of morale.

It is possible when the man comes back to his old associates that he says, "You fellows are suckers to stay here and work for this if you can get out and get what I am getting and help to educate your family."

We have had the three services come up before us and say they are badly short of trained people important to our security. I do not see why we have to have any more committees tell us the need to retain these men to keep the country secure. We have to face up, in our free-enterprise system to the inducements on the outside if we are going to maintain experienced skill in our services.

If you are going to get the people you have to meet the going wage, whether it be straight pay, inducements, or both.

I did not mean to make a speech, but regret we have to wait at a time we are adding skilled personnel shortages while at the same time building up our Defense Establishment.

AGREEMENT AMONG SERVICES?

Captain MARTINEAU. In that connection, may I add this in the matter of pay, Mr. Chairman?

There has been an effort in the last several weeks to get a revised reenlistment bonus legislation up before this Congress. The services have been unable to agree within themselves.

Senator SYMINGTON. I did not know disagreements were customary over there any more.

Captain MARTINEAU. Oh, it seems to me I think there are strong, hardy disagreements many times on many points.

Senator SYMINGTON. But it is healthy?

Captain MARTINEAU. Very healthy.

Senator SYMINGTON. Admiral, we have a little problem of time.

Senator Duff is anxious to get away. If it is in order, we would ask you and Admiral Russell some questions. Then we will have a consultation with Senator Duff about time.

Senator Ervin is out of town. Senator Jackson is chairing one of his subcommittees this afternoon, and Senator Saltonstall is at an appropriation committee.

Admiral GRIFFIN. Are you finished with the personnel presentation?

Senator SYMINGTON. Captain, I believe all the questions have been asked, and thank you for your eminently fine briefing.

Admiral Griffin, will you and Admiral Russell consider yourselves sworn. Mr. Counsel, will you proceed?

Mr. HAMILTON. Admiral Griffin, you will recall the colloquy between you and the chairman in which he mentioned that he put certain questions yesterday to Admiral Combs, and at his request I am putting a similar series of questions to you and subsequently to Admiral Russell.

TESTIMONY OF REAR ADM. C. D. GRIFFIN, OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Admiral GRIFFIN. Mr. Counsel, in consequence of the discussion at the meeting yesterday, I prepared a short statement that reflects my personal view in regard to that question. If you would like, I will read that or handle it in any way you want.

Mr. HAMILTON. And if there are any further questions I will be glad to raise them.

Pardon me just a moment. I think it might be advisable to make for the record what I assume to be a fact, that these views which you are stating are your own professional views?

Admiral GRIFFIN. Yes, these are my personal views.

Mr. HAMILTON. They are not official views?

Admiral GRIFFIN. They are not. These are my personal views.

Senator SYMINGTON. I would like the record to show they have been asked of you as sworn testimony, and that you are replying.

Admiral GRIFFIN. Yes, sir.

QUESTION OF ADEQUACY OF NAVY BUDGETS

My feeling in regard to the adequacy of forces presently and prospectively available to the Navy may be summarized as follows:

The threats which confront the United States are serious ones. It is necessary that the United States maintain a military posture of adequate effectiveness to deter aggression, or failing this, to win any war which may evolve.

I am not completely satisfied with the adequacy of the Navy we have today. However, I appreciate that the Navy claims are only one of the many directed to the budget of this country. I, therefore, can find no reason to quarrel with the budget decisions which have been made by properly constituted authorities within our Government whose job it is to assess the overall situation.

My feelings for the future are somewhat more optimistic than they are for the present, when consideration is had for the continuing introduction into the Navy of modern weapons systems.

In this connection I am mindful of several factors including the rapid rate of present technological developments, the complexity of modern weapons systems, the increased cost of components for these systems, and the approaching period of obsolescence of many types of naval ships.

IN VIEW OF GROWING SOVIET STRENGTH NAVY WILL NEED LARGER BUDGETS

With these factors in mind and with regard to the rising emergence of the Soviet Union as a naval power, it is my opinion that for years in the future the Navy will require considerably increased sums over those currently available, if we are to maintain the Navy in a position where it can assure the country that it is capable of carrying out successfully its mission.

This statement is largely predicated on my conviction that: first, if a general war should start with a surprise atomic attack, naval forces at sea will play a significant part in retaliating and may represent our remaining ability to take further action after the initial blows are struck by both sides. And second, in the future there will be an increased awareness of the importance of versatile forces which are usable under all military situations.

That completes my statement.

Senator SYMINGTON. Thank you, Admiral.

By versatile forces for clarification, are you referring to the future in missiles?

Admiral GRIFFIN. I am referring there, sir, to those forces which have the capability of being used under varying situations, such as all-out nuclear war, limited war, conventional war, or any other type that we may have, and also of peacetime usefulness to the country.

Senator SYMINGTON. Mr. Counsel?

NOT COMPLETELY SATISFIED WITH RATE OF MODERNIZATION

Mr. HAMILTON. Admiral, you mentioned as to the present situation you might feel some dissatisfaction, which you have expressed by saying that you might be more optimistic as to the future.

To what aspects of our present naval airpower would your present dissatisfaction attach?

Admiral GRIFFIN. It primarily is related to the introduction of new weapons. I have in mind, for example, high-performance aircraft. I have in mind also missiles and ships which are equipped to handle these types of weapons systems.

Mr. HAMILTON. Does your dissatisfaction arise from the feeling that it would be helpful if those could be introduced at a more rapid rate?

Admiral GRIFFIN. I wish we had more at the present time. However, I recognize fully that if we build too much in any one year, that sometime in the future we then will be faced with the same proposition of block obsolescence that is approaching us in the next several years.

Mr. HAMILTON. In connection with our present Navy-based fighter planes, do we have one that would be adequate to intercept a Soviet Bison, flying at its estimated maximum altitude?

Admiral GRIFFIN. We would have limitations, but we are coming along fast in this field. (D)

Mr. HAMILTON. Thank you very much, unless you care to elaborate on that point.

Admiral GRIFFIN. I only want to bring up one factor in connection with these questions Mr. Counsel, in what you termed I believe, "dissatisfaction."

Mr. HAMILTON. I believe the word was yours, Admiral, in your statement.

Admiral GRIFFIN. My statement was that I was not completely satisfied.

Mr. HAMILTON. I am sorry, I thought you said dissatisfied.

Admiral GRIFFIN. No, I think I said I am not completely satisfied.

Mr. HAMILTON. Check and see what you said.

Admiral GRIFFIN. "I am not completely satisfied."

Mr. HAMILTON. I was inaccurate.

Admiral GRIFFIN. Yes, sir.

I might say that this is probably characteristic of most military people from what knowledge I have.

NEW CARRIERS TO REPLACE RATHER THAN ADD TO TOTAL

Mr. HAMILTON. Now, turning our attention to the future, do you plan to add additional carriers to the fleet during the next 3 or 4 or 5 years, apart from the replacement, as I recall it, on an annual basis of one of the existing carriers with the new supercarrier?

Admiral GRIFFIN. No, sir. What we plan to do is replace obsolescence. We are not authorized to increase our force levels unless such force level increase is approved by the Joint Chiefs of Staff.

Mr. HAMILTON. Then is there a plan, so to speak, of the Joint Chiefs of Staff that establishes your present force level?

Admiral GRIFFIN. They are approved annually, that is right.

LEAD TIME FOR NEW CARRIERS

Mr. HAMILTON. What is the lead time between the time the decision is made to add another carrier to the fleet and the time the carrier can become operational?

Admiral GRIFFIN. You are refering to new construction? For carriers the lead time is approximately 48 months.

Mr. HAMILTON. Approximately 4 years, the large carriers.

Admiral GRIFFIN. For large carriers, it is 4 years.

Mr. HAMILTON. And what would be the lead time in connection with the production of additional planes for use?

Admiral RUSSELL. We consider 4 years is about optimum for the time from the statement on the part of the Chief of Naval Operations of a military requirement for a certain type of aircraft until the date we get it into service, sir.

Mr. HAMILTON. So that it takes you twice as long—did you say 48 months?

Admiral GRIFFIN. The same period.

Mr. HAMILTON. That is the same period of time?

So that the present program that has been approved will effectively determine the size and character of your carrier striking force, ships and planes for the next 4 years; is that right?

MODERNIZING BY DEGREES

Admiral RUSSELL. That is not quite right, sir, because there is a continual input you will understand.

We are modernizing by degrees. Of an operating inventory of about 10,000 aircraft, we procure per year about 2,000 new airplanes, so you might say that one-sixth each year is of the newer vintages, the higher performance and so on.

For example, just now the intercepter, the F4D1 which has the good ceiling, is just going into service.

The F5D is coming along. (D)

Mr. HAMILTON. The thing I was coming to is this.

CARRIER PROGRAM

As I recall the evidence that you have given us, you now have 15 carriers in the fleet?

Admiral RUSSELL. That is right.

Mr. HAMILTON. That is right?

Admiral GRIFFIN. We have 15 in full commission in the fleet; that is correct.

Mr. HAMILTON. And the program is to continue that number; that is, the present program contemplates a continuance of the number but not of the specific carriers?

Admiral GRIFFIN. Of attack carriers; that is correct.

Mr. HAMILTON. At the present time there is one supercarrier in the fleet, is that right, the *Forrestal?*

Admiral GRIFFIN. As we have said, we don't like the term "supercarriers," sir.

Mr. HAMILTON. One carrier of the *Forrestal* class in the fleet and the *Saratoga* to come?

Admiral GRIFFIN. The *Saratoga* will come in this summer.

Mr. HAMILTON. And then one additional carrier of that kind will come into the fleet in each of the successive 2 years to replace carriers of a lesser class, is that right, under the present plan?

Admiral GRIFFIN. Under our present program they will come in at intervals of approximately 1 year.

Mr. HAMILTON. Until you have a total under present plans, am I correct in my recollection of the testimony, four carriers of the *Forrestal* class?

Admiral GRIFFIN. We have five building now (including *Forrestal*) and the sixth one is in the 1957 budget which is now before the Congress.

Mr. HAMILTON. The sixth?

Admiral GRIFFIN. The sixth.

Mr. HAMILTON. The present plan would contemplate a total of six of the *Forrestal* class?

Admiral GRIFFIN. So far.

Mr. HAMILTON. And if a decision were made to add additional carriers of that class, the carriers I understand your testimony could not become operational for 4 years approximately?

Admiral GRIFFIN. I want to make sure we understand each other, sir.

We are talking about new construction. If you have to get a ship from new construction, that is right. In an emergency we could take a ship which we have in the reserve fleet, and modernize it, and utilize it even though its capabilities are not as good.

Mr. HAMILTON. Do you have a number of those ships that would be available?

Admiral GRIFFIN. We have a few; yes.

Mr. HAMILTON. They could be converted into the *Forrestal* type?

Admiral GRIFFIN. Not to the *Forrestal* type. They are basic *Essex* class carriers.

Mr. HAMILTON. But the present program as I understand it, does not contemplate that?

Admiral GRIFFIN. We have been modernizing all of these carriers, but we are building toward having all of our attack carriers ultimately in the *Forrestal* class or the successors to the *Forrestal* class.

Mr. HAMILTON. What I am really coming at, and maybe I should state it generally and you can speak to the point, what are the measures that are being taken under present plans to be effective within the next 4 years that would increase the striking power of the naval air arm significantly? I am referring to measures other than the introduction into the fleet of new planes of the kind what you have described for the existing planes, and other than the introduction into the fleet of the new carriers that you have described in replacement of some of the existing carriers. Are there any?

MISSILE SHIPS

Admiral GRIFFIN. The introduction of missile ships is an example.

Mr. HAMILTON. The introduction of missile ships for offensive purposes, for launching surface-to-surface rockets?

Admiral GRIFFIN. For both, for offensive and defensive purposes.

Mr. HAMILTON. And how many of those?

Admiral GRIFFIN. You have figures that were given in the missile presentation.

Mr. HAMILTON. But that is the kind of thing you had in mind?

Admiral GRIFFIN. That is correct. In addition, we are introducing improved sonars, and other improved equipments for detection of submarines; also improved radars.

Mr. HAMILTON. But it is not now contemplated to increase the size of the fleet in terms of numbers?

Admiral GRIFFIN. No, it is not.

Mr. HAMILTON. But to change the character of some of the ships that are in the fleet, is that right?

Admiral GRIFFIN. Yes, sir.

NAVY CARRIER AIRCRAFT NOT TO BE SIGNIFICANTLY INCREASED

Mr. HAMILTON. Now will the total number of aircraft that can be handled by the fleet on carriers increase significantly during the next 4 years, as distinguished from the types of aircraft?

Admiral GRIFFIN. Not significantly, no.

This is true under the assumption that the present ceiling that we have on the number of carriers is not changed.

Mr. HAMILTON. How long has that ceiling been in effect?

Admiral GRIFFIN. It was made 15 in fiscal year 1956, and prior to that it was 14.

Mr. HAMILTON. Admiral Russell, in the interests of saving your time, may I ask you to comment, if you would care to, on the questions that I have put to Admiral Griffin, unless you have, as the Chairman suggests, a prepared statement of your own which you would care to give.

TESTIMONY OF REAR ADM. S. S. RUSSELL, CHIEF, BUREAU OF AERONAUTICS, DEPARTMENT OF THE NAVY

Admiral RUSSELL. I have no prepared statement.

What I give will be off the cuff, my personal ideas.

I would like to concur wholeheartedly with what Admiral Griffin has said. This is precisely my own personal opinion.

There are a couple of things that I would like to mention here.

I have noticed in the questioning of the committee that the role of the carrier in a fleet may not be completely understood.

CARRIER IS ESSENCE OF NAVAL POWER

This is naval power in its essence, the carrier.

I would like to speak briefly to the toughness of it, sir. I have fought in the *Essex* class carriers. We built 25 of these during World War II. Of 21 of them which were in action, sir, only 1 came through without battle damage. None were sunk, sir.

I have been on an *Essex* class carrier when it was kamikazed. I have been on an *Essex* class carrier, the U. S. S. *Franklin*, when it was bombed and very badly burned. These ships were not sunk, sir. They are tough.

I would like to mention, if I might, a subject which has not been raised except more or less indirectly.

A great deal depends on knowing "when the balloon is going up." This point has come up repeatedly. We are expending a great deal of effort in early warning. The thought I would like to leave is this. If our intelligence were so perfect that we knew when these strikes were coming over, when the balloon was going up, wouldn't this be a wonderful thing?

So I would like to point out to the committee the importance of intelligence—good intelligence, sir.

I should like to say that there are very promising developments in the fleet which were not thoroughly stressed here. I would like to refer to our present capability in assault missiles in the fleet. We have now, deployed in the fleet, Regulus I. We can fire it from submarines, we can fire it from cruisers, we can fire the Regulus from carriers.

I don't think this has been stressed enough, sir.

This is sort of a look toward the future. And I would never suggest that the carrier is going to last forever.

There may be better weapons later, but at the present the carrier is our concentration of strength. It has a compressed version of air defense, a subject on which General Partridge has spoken. It has the early warning and the fighter cover for ships at sea, and it is the embodiment of offensive strength at sea.

I would like to say just a word on the importance of people.

COMPLEXITY INCREASING

We see great complexity in weapons in the future. This means that people have to be smarter, have to be better educated, and so on, and we are more or less in competition with industry.

We need a very highly trained outfit, good people, people able to fight, and I would not for a moment, in the questions raised here about where you place the carriers, have you think that we are not going to have a hell of a fight on our hands, sir.

This is why we build carriers and this is why they are manned in this fashion. This is why the people are trained. We will have a fight, of course we will have a fight, and we will have losses, too, sir; but it will be a good fight and I think under the present skills we have in the fleet it will be a very good fight, sir.

But the subject of better people comes up also in industry, which is currently one of my worries, supplying high-performance aircraft to the fleet, and I worry here quite a bit, sir. As you know, we are being outstripped in education by the Russians apparently, from all indications. People of great skill and scientific knowledge are in extreme demand. I would cite the scientist, Dr. Krause who was at the Naval Research Laboratory, a brilliant and wonderful fellow.

He was bid away from us by the Lockheed Aircraft Co. He was dissatisfied there. He became a floater on a consultant basis. I understand his services now are being bid for by the Ford Motor Co., and this disturbs me a great deal, the unsettled conditions in the scientific community.

These people are being lured away. They are not productive when they are changing jobs and this is a situation which, I think, should concern us all.

There was another rather promising weapons system about which we spoke briefly.

We will say a little more about it in the research and development presentation and I can give you quite a bit of data on it if you wish, sir. This is the seaplane system, which again is a flexible system.

This, sir, is all I have in the way of informal remarks.

Mr. HAMILTON. I thank you both very much.

EXCELLENT PRESENTATION

Senator SYMINGTON. I have heard many off-the-cuff comments around this town, but never a better presentation than the one you have just given.

I congratulate you on it.

TODAY VERSUS TOMORROW

There are some things permanently in my mind. I was in England in the summer of 1937 when the most important thing in the world to the British was their budget. Their officers and civilian chiefs emphasized that they supported the budget, although they felt in future years it would probably have to be more.

In 1941 I went back to England, with Col. Jack Murtha, who was killed in the first Kamikaze attack I believe, on the cruiser Nashville; and also going over was my good friend Adm. Ralph Ofstie.

We went to a beaten country. They were very brave—but they were licked, unless America came into the war.

In my opinion the reason they suddenly found themselves in that position was because they thought it was more important to balance the budget than it was to face the growing menace of the Nazis.

As I have watched this presentation, and that of the other services, I am impressed with one thing which you military men know far more about.

What we are going to have tomorrow in weapons may have to cope with what the possible enemy has today.

The big exception is the surface Navy.

Turning briefly to another subject, the seaplane idea was given to me a long time ago as one of the great weapons of the future, by General Lindbergh.

IMPORTANCE OF SUBMARINE

The Air Force was not particularly interested in it at that time. I understand they may have changed their minds.

What worries me also is the possibility all of us may have been underestimating the submarine, not because of the great quantities being built by the Soviet, not because we haven't the fleet to handle protection of shipping, which we most certainly did not have at the beginning of World War II, but because we may still be considering the submarine as a defensive weapon; this when it could turn into one of the greatest offensive weapons of the future that is possible for man to build.

USE OF OUR RESOURCES FOR DEFENSE

After the brutal experiences of World War I and World War II, and the condition of our defenses just prior to Korea, I would rather have the military people say what they think they need, without regard to other problems. Then the administrative heads of the Government, in conjunction with the Congress, can make the decision as to how much of that need will be granted.

All these figures about our industrial complex as against that of the Soviets may be totally misleading, because nobody argues about the fact the Communists are utilizing their industrial complex primarily to build power, whereas we are utilizing ours primarily to build comfort and a better standard of living.

I am for both of the latter, but still maintain there is not much sense in overemphasizing the importance of money to the point where one may end up as the richest man in the graveyard.

Those are my feelings. I want to tell you and Admiral Griffin how impressed we are with your statements. It is fine to have them on the record.

APPRECIATION

I believe you have done your country a service this afternoon.

Senator Duff?

Senator DUFF. I have nothing further to say except that I join in the statement of the chairman as to the very wonderful presentations that both these Admirals have made.

Senator SYMINGTON. Gentlemen, both Senator Duff and I have a time problem. I think it would be a mistake at this time to go into the research and development briefing. It is 10 minutes after 4. We promise you, Admiral, that we will have this final hearing—it is the final one, is it not?

Admiral GRIFFIN. That is the final one we have planned at this time, sir; unless you require additional information.

Senator SYMINGTON. Or unless you have something further to present to the committee. We want this committee to have a record of the facts, exactly what you think about our relative position today.

Therefore, Mr. Counsel, if it meets with your approval I think we had better plan another briefing.

We may ask you, because we are getting tight on time, to have it at some unusual hour, instead of the normal 10 o'clock or 2:30; but we will be glad to accede to your wishes.

Admiral GRIFFIN. I would appreciate very much, sir, having as much advance notice as possible because of the number of people involved and the concurrent hearings that are going on in other parts of the Senate, sir.

Senator SYMINGTON. Yes; we will be sure to give you at least 48 hours.

Thank you for your courtesy and thanks to all the members of the staff.

Admiral Combs, we also are very grateful to you and Admiral Russell.

(Whereupon, at 4:15 p. m., the committee was adjourned.)

STUDY OF AIRPOWER

WEDNESDAY, JUNE 13, 1956

UNITED STATES SENATE,
SUBCOMMITTEE ON THE AIR FORCE OF THE
COMMITTEE ON ARMED SERVICES,
Washington, D. C.

The subcommittee (consisting of Senators Symington, Jackson, Ervin, Saltonstall, and Duff) met, pursuant to recess, at 10:15 a. m., in room 212, Senate Office Building, Senator Stuart Symington (chairman of the subcommittee) presiding.

Present: Senators Symington, Jackson, and Duff.

Also present: Ramsay D. Potts, Jr., associate general counsel; Fred B. Rhodes, legal consultant to Senator Saltonstall; Edward C. Welsh, assistant to Senator Symington; and Wallace L. Engle, staff member.

Vice Adm. Ruthven E. Libby, United States Navy, Deputy Chief of Naval Operations for Fleet Operations and Readiness; Rear Adm. Rawson Bennett, United States Navy, Chief of Naval Research; Rear Adm. W. A. Schoech, United States Navy, Assistant Chief, Bureau of Aeronautics for Research and Development; Rear Adm. A. M. Morgan, United States Navy, Assistant Chief, Bureau of Ship Design and Research; Col. Donald S. Bussey, Office of Deputy Chief of Staff for Operations, Department of the Army; Capt. S. S. Searcy, United States Navy, Assistant Director, Program Analysis Group; Clark A. Morgan and Bernard S. Bogdanowitz, Office of Secretary of Defense, Security Office; Rear Adm. J. S. Russell, United States Navy, Chief, Bureau of Aeronautics; Rear Adm. C. D. Griffin, United States Navy, Office of Chief of Naval Operations; Captain J. D. Crowley, United States Navy, Assistant Director, New Developments and Operational Evaluation Division, Office of Chief of Naval Operations; Rear Adm. W. V. Davis, Jr., Assistant Chief of Naval Operations for Fleet Readiness; Capt. Edwin B. Hooper, United States Navy, Assistant Chief of Bureau of Ordnance for Research; Col. Rollen H. Anthis, United States Air Force; Richard G. McCarthy, YNI, United States Navy; Capt. J. S. McCain, Office of Production, Office of Secretary of Defense; Comdr. Wendell W. Suydam, United States Navy, Bureau of Aeronautics; Comdr. S. E. Wagenhals, United States Navy, Bureau of Ordnance; Capt. E. R. Tilburne, United States Navy, Bureau of Ships; R. K. Buchanan, Jr., Special Assistant to Chief of Naval Research, United States Navy; Comdr. David C. Peto, Bureau of Ships, United States Navy; Comdr. Roy Gene Anderson, United States Navy, Bureau of Ordnance; Capt. A. B. Metsger, United States Navy, Deputy Chief of Naval Research; William W. Edwards, Comptroller, Office of Naval Research; Comdr. James F. Schremp, United States Navy, Office of Judge Advocate

General; William Bradford, Bureau of Ordnance projectionist; Capt. W. M. Hanger, United States Navy, Bureau of Aeronautics.

Senator SYMINGTON. I call to order this meeting of the Subcommittee on the Air Force of the Senate Armed Services Committee.

Admiral Griffin, who is going to run the show this morning?

Admiral GRIFFIN. Vice Admiral Libby, sir. This is an R. and D. presentation.

Senator SYMINGTON. Admiral Libby, we welcome you here, and anticipate an informative briefing. At this point in the record, I would like to insert a résumé of your distinguished career.

VICE ADM. RUTHVEN E. LIBBY, UNITED STATES NAVY

Ruthven Elmer Libby was born in Spokane, Wash., on December 22, 1900, son of the late Albion C. and Emma Lois (Chase) Libby. He attended Bryant Grammar School and North Central High School in Spokane, prior to his appointment to the United States Naval Academy, Annapolis, Md., from the Fifth District of his native State in July 1918. He was graduated with distinction and commissioned ensign on June 3, 1922, and subsequently progressed in rank, attaining that of rear admiral to date from October 1, 1947, having served in the temporary rank of commodore from April 23, 1945, until February 5, 1946. He was appointed to the rank of vice admiral, to date from February 3, 1956.

After graduation from the Naval Academy in June 1922, he sailed in the U. S. S. *Chaumont* to the Pacific coast, and in August of that year reported for duty in the U. S. S. *Tennessee*, operating first with Division 8, Battle Squadron 4, Pacific Fleet, and later with Division 5, Battleship Divisions, Battle Fleet. Detached from the *Tennessee* in November 1923, he returned to the east coast, and in February 1924, reported to the Postgraduate School, Annapolis, Md., for the course in naval construction. In September of that year, he joined the U. S. S. *Utah*, and remained in that battleship operating with Division 2, Scouting Fleet, until May 1926. He next had 3 years' duty in the U. S. S. *Colorado*, also a unit of Division 5, Battle Fleet.

In June 1929 he returned to the Postgraduate School for instruction in electrical engineering, continuing the course at various places including Columbia University, New York, N. Y., from which he received the degree of master of science in 1931. On October 17, 1931, he was assigned duty in connection with converting and fitting out the U. S. S. *Boggs*, a radio-controlled light mobile target unit. He served as her engineering officer from her commissioning, December 19, 1931, until June 1934, during which time that destroyer was used in aerial bombing and surface gunnery practice in operation with destroyers, Battle Force.

Following a 2-year assignment in the Electrical Design Section, Bureau of Engineering, Navy Department, Washington, D. C., he returned to sea in June 1936 as squadron engineer officer on the staff of commander, Destroyer Squadron 2. He next was executive officer of the U. S. S. *MacDonough*, operating with Destroyers, Scouting Force, from February 1937 until May 1938, after which he served as engineering officer in the U. S. S. *Northampton*, flagship of Cruiser Division 4, Scouting Force. In July 1939 he returned to the Bureau of Engineering (consolidated with the Bureau of Construction and Repair and redesignated Bureau of Ships on June 24, 1940), and served in the Interior Communication Section of that Bureau until November 23, 1940.

Reporting on December 11, 1940, as assistant naval attaché, American Embassy, London, England, he served in that assignment until August 8, 1941, followed by brief duty in the Office of the Chief of Naval Operations, Navy Department. On September 4, he joined the staff of the commander in chief, Atlantic Fleet. After the Japanese attack on Pearl Harbor, December 7, 1941, he transferred to the staff of the commander in chief, United States Fleet, for duty as aide. While in the latter assignment, he attended the conferences of the Combined Chiefs of Staff at London and Casablanca. He was awarded a Gold Star in lieu of a Fourth Legion of Merit for services as aide to commander in chief, United States Fleet, from December 27, 1941, to March 22, 1943.

In March 1943 he became commander, Destroyer Squadron 1, U. S. S. *Phelps*, flagship, and with that squadron participated in the capture of Attu and the subsequent Aleutian Islands operations. When landings were made on the north coast of Attu and troops proceeded inland, his squadron was part of the

naval force which covered the landings, and, in the bitter fighting which followed, furnished fire support for the troops. His squadron later participated in October 1943, in the Wake Island raid and capture of the Gilbert Islands.

For "exceptionally meritorious conduct * * * as destroyer squadron commander during the seizure and occupation of enemy-held Attu Island in May 1943, and later of Kiska Island * * *" he was awarded the Legion of Merit.

On January 16, 1944, he assumed command of Destroyer Squadron 56, U. S. S. *Newcomb*, flagship, with additional duty as commander, Destroyer Division 111. Upon arrival at Pearl Harbor on February 27, he reported to commander, Destroyers, Pacific, for a month's temporary additional duty with the development of doctrine for shore bombardment by destroyers. With Squadron 56, he participated in the Marianas campaign (capture and occupation of Saipan and Tinian), and the capture and occupation of the southern Palau Islands. For his contributions to these operations, he was awarded Gold Stars in lieu of the Second and Third Legion of Merit, each with Combat V.

He is also entitled to the ribbon for and a facsimile of the Navy Unit Commendation awarded the U. S. S. *Newcomb*, flagship of Destroyer Squadron 56, for "outstanding heroism in action against enemy Japanese forces in the Saipan-Tinian operations, May 29 to August 5, 1944; Palau, September 6 to October 1, 1944; the Battle of Surigao Strait, October 24–25, 1944 * * *."

Detached from command of Destroyer Squadron 56 on October 6, 1944, he was ordered to duty in the Planning Section of the Office of the Chief of Naval Operations, Navy Department, Washington, D. C. On March 28, 1945, he reported as senior naval member of the Joint War Plans Committee, Joint Chiefs of Staff, and, served in the rank of commodore in that assignment until February 1946.

Following brief duty as commander, Cruiser Division 11, Pacific Fleet, before its dissolution, he assumed command on April 22, 1946 of the U. S. S. *Bremerton* at Shanghai, China. He was detached from command of that cruiser in February 1947, and next joined the staff of the commander in chief, United States Pacific Fleet, as chief of staff for plans. After his promotion to rear admiral in November 1947, he was assigned to the Office of the Chief of Naval Operations, Navy Department, Washington, D. C., where on February 11, 1948, he became Deputy Chief, Strategic Plans. In October 1948 he became Director, General Planning Group, Naval Operations. He later had additional duty as a member of the Permanent Joint Board on Defense, United States-Canada. In September 1950 he returned to service afloat in command of Cruiser Division 3, commanding that division until March 1952, when he reported for duty under the commander, Naval Forces, Far East. He participated as a United Nations delegate at the Korean truce talks from November 1952 until late June 1953.

For outstanding services during the Korean conflict, he was awarded a Gold Star in lieu of the Fifth Legion of Merit with Combat V, and an Oak Leaf Cluster in lieu of the Sixth Legion of Merit by the Department of the Army.

Oak Leaf Cluster in lieu of the Sixth Legion of Merit: "For exceptionally meritorious conduct in the performance of outstanding service during the period from November, 26, 1951, to May 8, 1952."

In August 1952 he became Assistant Chief of Naval Operations (Operations), Navy Department, and on May 4, 1954, reported as commander, Battleship-Cruiser Force, United States Atlantic Fleet. In January 1956 he was assigned to the Office of the Chief of Naval Operations, Navy Department, and in April 1956 was designated Deputy Chief of Naval Operations (Fleet Operations and Readiness).

In addition to the Legion of Merit with four Gold Stars and Oak Leaf Cluster (Army), and the Navy Unit Commendation Ribbon, Vice Admiral Libby has the Victory Medal, World War I, the American Defense Service Medal, Base Clasp; the Asiatic-Pacific Campaign Medal with silver star (five engagements); the World War II Victory Medal; the Navy Occupation Service Medal, Asia Clasp; China Service Medal; the National Defense Service Medal; the Korean Service Medal; the United Nations Service Medal; and the Philippine Independence Ribbon.

Vice Admiral Libby was married on May 8, 1926, to Miss Evelyn Maynard Claflin of New York, N. Y. Their official home address is R. F. D. No. 2, Warrenton, Va.

Admiral, would you and anybody that plans to testify be sworn, please?

Would you all raise your right hands?

Do you solemnly swear that you will give to this Subcommittee on the Air Force of the Senate Armed Services Committee the truth, the whole truth, and nothing but the truth, so help you God?

(The following were sworn:)

Admiral Libby, Admiral Bennett, Admiral Morgan, Admiral Schoech, Admiral Davis, Captain Hooper, and Captain Crowley.

Mr. POTTS. Mr. Chairman, Admiral Libby has a prepared statement, and he has four other witnesses who have prepared statements. My suggestion would be that we let them run through those prepared statements, at the end of which will be a short presentation on a typical R. & D. project taking us through a cycle; that we ask questions against that project, and then go back and ask questions against the prepared statements.

Senator SYMINGTON. Senator Duff, does that meet with your approval?

Senator DUFF. Thoroughly agreeable.

Senator SYMINGTON. Proceed, Admiral, please.

TESTIMONY OF VICE ADM. R. E. LIBBY, DEPUTY CHIEF OF NAVAL OPERATIONS UNITED STATES NAVY

Admiral LIBBY. Mr. Chairman, I am Vice Admiral Libby, Deputy Chief of Naval Operations for Fleet Operations and Readiness. In that position my mission is to implement the command functions of the Chief of Naval Operations concerning the use of the operating forces of the Navy including their training readiness and preparation for war.

In discharging this mission, my office is responsible for the performance of a number of functions having a direct bearing upon the readiness of the fleets for combat operations; and since research and development is one of the most vital means by which readiness for war is achieved, it is one of the functions of my office to review, coordinate, and promulgate the requirements for new material developments, and to review and evaluate the resultant research and development programs.

It is pertinent here to point out to this committee that the Navy's research and development program must cover a wide front in order to keep all facets of the Navy and Marine Corps abreast of new developments in science and technology.

IMPORTANCE OF RESEARCH AND DEVELOPMENT

The Navy must proceed with research and development not only in the air warfare field, but in such naval warfare fields as antisubmarine warfare, prosubmarine warfare, mine warfare, mine countermeasures, nuclear-ship propulsion, and nuclear weapons for surface and subsurface use—to mention a few.

The Navy organization for research and development has been developed and established with the objective of providing an orderly, efficient method of conducting Navywide research and development.

I believe it will save the committee time in the long run if I now outline to you what our organization is and how it works.

NAVY R. AND D. ORGANIZATION

I have with me Rear Adm. Rawson Bennett, the Chief of Naval Research; Rear Adm. W. A. Schoech, Assistant Chief of the Bureau of Aeronautics for Research and Development; Rear Adm. Armand M. Morgan, Assistant Chief of the Bureau of Ships for Ship Design and Research; and Capt. Edwin B. Hooper, Assistant Chief of the Bureau of Ordnance for Research.

These officers are prepared to go into as much detail as the committee may desire with respect to their particular R. and D. activities, which collectively represent the major portion of the Navy's overall program.

I shall call upon them to discuss their programs, and to answer technical questions you may have; and shall confine my remarks to the broad picture.

Basically, the Navy R. and D. organization follows the established consumer-producer relationship vis-a-vis the Chief of Naval Operations and the material bureaus. By this I mean that the CNO prescribes the "what, when, and where" of new developments in Navy weapons and weapon systems, and the Chief of Naval Research and the technical Bureaus produce the "how" and the hardware.

In this process, of course, neither side of the house works "in vacuo"—each is thoroughly conversant with the day-to-day work of the other, to the end that the CNO not place either unattainable or outmoded, out-dated demands upon the technical bureaus.

Navy research and development is geared to the weapons system concept. The objective of all Navy research and development is timely development of functionally and tactically complete Navy warfare systems.

PLANNING OBJECTIVES

In consonance with the DOD Planning Guide for Military Research and Development, the Navy maintains current a planning objective for each of 15 Naval warfare categories. These are statements, in broad terms, of scientific or operational problems which the Navy must solve, or functions which it must perform in each of these categories in the future.

These categories include such fields of naval warfare as air defense, amphibious operations, antisubmarine, and mine warfare operations, atomic warfare, combat air-support operations, sea combat operations, and so on.

The Navy's annual R. and D. program is formulated within the scope of these standing planning objectives. Ideas as to how to solve the problems implicit in the planning objectives stem from the Naval Research Advisory Council, the Office of Naval Research, evaluated intelligence, the forces afloat, the technical bureaus, the Operations Research Group of ONR, the Operational Evaluation Group in OPNAV, the warfare desks in the Office of the Chief of Naval Operations (Surface Warfare, Undersea Warfare, Atomic Energy, Guided Missiles, Air Warfare, Naval Communications, HQ Marine Corps, Logistics Plans); special study groups, the Long-Range Planning Group, and from industry.

OPERATIONAL REQUIREMENT

The warfare desks within OPNAV and the HQ of the Marine Corps convert these ideas into operational requirements for new weapons and weapons systems, after analyzing the suggestions to determine the feasibility of translating them into military usefulness.

An operational requirement is established when it has been determined that an operational need exists; that the proposed development will satisfy that need; that it is technically feasible; and that it can be accomplished at an affordable cost.

Requirements for basic research are established by the Chief of Naval Research.

Essentially, an operational requirement for a weapon or weapon system will describe the "what, when, and where" of the weapon or system, but will not attempt to come up with the technical "how" of its accomplishments.

After coordination and screening by the Research and Development Deputy Review Board and approval by my office, operational requirements are then passed to the cognizant material Bureaus for conversion into projects, which delineate the means by which equipment can be developed to satisfy the operational requirement.

PROJECTS

It is characteristic of this system that the technical bureaus are free to determine the optimum technical approach to solving the problem stated by an operational requirement.

Accordingly, they formulate research and development projects in the light of their special technical skills and knowledge, giving consideration to all potentially valuable approaches.

Projects so formulated are coordinated by the Research and Development Review Board, and by them submitted to the Navy Research and Development Committee.

The Assistant Secretary of the Navy for Air, who is responsible for the coordination of the navywide R. and D. effort, is the chairman of this committee.

This committee selects the projects which will comprise the annual Navy research and development program submitted to the Assistant Secretary of Defense (Research and Development).

Projects in this program for which funds are ultimately provided constitute the Navy's annual research and development program. For any one year, then, our R. and D. program will comprise both old or continuing projects and new projects.

PROGRAMS

R. and D. programing was considerably facilitated beginning with fiscal year 1955 when the Congress made the R. and D. appropriation a continuing appropriation rather than an annual one, as it had been up to that time.

New projects arising during the fiscal year may be funded either by a reprograming within the funds allocated and apportioned, or by additional money made available from other sources.

Each new weapon and weapon system resulting from our R. and D. program is evaluated in the operational environment for which it is designed, before being approved for service use.

We maintain the operational development force for this purpose. This is a fleet organization with headquarters at Norfolk, and is staffed with officers specially qualified in the test and development field. It employs the services of all types of naval ships and aircraft.

Once it has been determined that the capabilities of the new weapons, weapon system or component satisfies the operational requirement, it is approved by the CNO for service use. However, equipment so accepted is continuously monitored and studied in the fleet for possible improvement in performance, reliability, maintainability, and operability from the human engineering standpoint.

One of the knottiest problems in research and development is the determination of program balance—the proper relationships between basic research and applied research and development.

It is only through continuous and energetic pursuit of basic research that new equipment and greater capabilities can be achieved.

Without the exploitation of technological breakthroughs as the results of studies in basic research, only marginal improvements and modification to existing items can be realized.

Judgment and experience indicate that we must maintain a sound basic research program for long-range development, and at the same time initiate timely development programs that make a substantial improvement in fleet readiness.

In the final analysis, our research and development programs must be a compromise embodying developments to meet the critical needs of present, short-term future, and long-term future naval forces.

EXAMPLES OF FUTURE DEVELOPMENTS

To illustrate the scope of our current research and development program, the following are some of the more important developments which are expected to be completed within the proximate future: This is just a sampling, this is by no means a complete list.

A surface ship antisubmarine weapon system with range to match the capabilities of our new sonars. (D)

Improvement in the range, altitude, and kill capabilities of guided missiles, with jump-up and/or jump-down capabilities incorporated in air-to-air missiles. (D)

Development of an accurate inertial guidance system for use with guided missiles.

Lightweight versions of the air search radars for installation on destroyer-type ships and smaller.

A three coordinate, rapid-data-rate shipborne radar for use with guided-missile systems.

A high capacity data handling, display, and transmission system for use in the fleet.

Rapid scan electronic countermeasure search receivers for both aircraft and ships, and improved electronic jammers for use against enemy communications and radars in all usable frequency bands—for both ship and aircraft use.

A nuclear propulsion plant utilizing a new heat transfer system will become operational in the submarine *Seawolf* during the next year.

COORDINATION

The Navy's research and development program is fully coordinated with the programs of the Army and Air Force and with those of other agencies such as the National Advisory Committee for Aeronautics and the Atomic Energy Commission.

The overall aim is to deliver to our Armed Forces, modern and superior weapon systems which are the best that can be devised. I believe our program is comprehensive and that it is resulting in a steady improvement in naval striking power.

I should like now to call upon Rear Adm. Rawson Bennett, the Chief of Naval Research.

Admiral Bennett.

TESTIMONY OF REAR ADM. RAWSON BENNETT, CHIEF OF NAVAL RESEARCH, UNITED STATES NAVY

Admiral BENNETT. Mr. Chairman, I am Rear Admiral Bennett, Chief of Naval Research. For the information of the committee I have spent most of the time since 1937 in research and development with emphasis on electronics.

I will not take time for details. My duties are to coordinate and carry out the Navy's basic research program and other matters delineated in Public Law 588.

In addition, the Secretary of the Navy has assigned to the Chief of Naval Research the technical coordination of development as previously discussed with various committees of the Congress.

Funds for research and development are contained in the appropriation, "Research and development, Navy." These funds are allocated by my Office to the technical bureaus in accordance with the established program as described by Admiral Libby.

I would like to give you some general ideas before presenting the statistics on research and development funds.

IDEAS, MANPOWER, MONEY

The work that can be accomplished in the research and development area at a given time depends on three factors—ideas, manpower, and money.

Of these, by far the most important is the idea. Without a new idea, money and manpower can be expended in quantity without substantial gain.

Given a new idea, it matters little whether manpower is in short supply or not. Once the money is added to the idea, the manpower will appear. The challenge of the new idea attracts good people.

The provision of money alone does not solve any problem. The provision of money alone when ideas and manpower are in short supply encourages only the formation of mediocre groups working on minor improvements.

PROVISION OF FACILITIES A CRITICAL AREA

At the present time, the provision of special facilities is a most critical area. The design and construction of such facilities is a slow process despite the fact they are essential for the solution of many present day problems.

R AND D FUNDS NOT SHORT

Improper timing of the supply of funds for such facilities can result in substantial research and development delays. I am not aware of any specific shortage in this area presently. I mention the matter because the effect of such facilities on the useful expenditure of research and development funds is not always appreciated.

Chart 1, which is the chart showing the growth of the Navy's research and development program in dollar volume from 1940 through 1957, a period that includes two wars.

That chart along the bottom lists the years 1940 to 1957, the left hand shows the dollars in hundreds of millions, the top line being $455 millions.

It is interesting to note that in 1940 a research and development program as we know it today did not exist. I might interject here the Navy has of course done a great deal of research and development, going back a great many years, but the program was not organized nor funded as we now know such programs.

FUNDS FOR R AND D

Mr. POTTS. Admiral, I wonder if you could furnish for the record at this point the sum totals for each year between 1940 and 1956.

Admiral BENNETT. Should I just take the highlights?

Mr. POTTS. You don't have to read them off now, but if you would please provide them for the record at a later time.

Admiral BENNETT. I will be glad to.

(The chart and data requested have been supplied to the committee in classified form.)

Senator SYMINGTON. The line you would run with that chart would be the extent of your gross national product. The line is deceiving by itself. This is no criticism of the admiral. He is exactly right. But you have two things.

First a tremendous increase in your gross national product.

It is some $400 billion now.

In addition since 1947 the value of the dollar has dropped some 50 percent, so the chart in itself is intriguing. But that line does not give the true story, either the percentage of income as a country, or in purchasing power.

Senator DUFF. May I make a suggestion that there be two other charts prepared, one to show the gross national product and the other the fluctuating value of the dollar.

Senator SYMINGTON. I think that would be excellent.

Mr. POTTS. We will have those prepared and put in the record at this point.

Senator SYMINGTON. You might get a copy of the chart because you cannot put a chart in the record.

Mr. POTTS. Would you get that chart and then also provide the other data along with this data you are going to furnish on your research and development funds to be inserted?

(The data requested is as follows:)

NAVY DEPARTMENT

Navy research and development program funds, fiscal years 1940–57

Fiscal year	Navy research and development program funds (in thousands of dollars)	Navy research and development program funds adjusted by the Consumers Price Index (in thousands of dollars)	Gross national product (in billions of dollars)
1940	8,920	9,036	100.6
1941	26,315	25,394	125.8
1942	47,827	41,657	159.1
1943	74,148	60,801	192.5
1944	167,658	135,300	211.4
1945	231,336	182,524	213.6
1946	219,779	159,999	209.2
1947	217,951	138,617	232.2
1948	206,059	121,781	257.3
1949	238,498	142,145	257.3
1950	200,303	118,379	285.1
1951	376,642	206,023	328.2
1952	454,760	243,297	345.2
1953	436,421	230,430	364.5
1954	365,389	194,021	360.5
1955	394,151	208,900	387.4
1956	414,175	----------	----------
1957	446,872	----------	----------

Mr. POTTS. I might say, Mr. Chairman, we will come later to the point of research and development related funds that have been spent on procurement of missiles and construction of facilities for research and development and so on.

This is only part of the picture.

DECLINE IN RESEARCH AND DEVELOPMENT FUNDS, BEGINNING 1953

Admiral BENNETT. Another encouraging change in national policy is indicated by this chart.

You will note that from 1945 with the end of World War II to 1950 there was a steady if irregular decline in appropriations for research and development, roughly from $450 million to $350 million.

This trend was stopped short by the Korean war.

Again, with the cessation of hostilities, funds for research and development began to fall off.

However, beginning in 1955, in an era of comparative if uneasy peace, funds for research and development have been increasing steadily.

ADJUSTMENTS FOR INFLATION, WOULD REVEAL GREATER DECLINES

It should be noted that the amounts used for compiling this chart are in actual dollars available and no adjustments have been made to compensate for the steady decline in the purchasing power of the dollar that has taken place during this period. In terms of levels of effort, the downgrades should be greater and the rises much flatter.

R. and D. projects in the Navy are classified into 14 or 15 categories such as air defense operations, sea combat operations, etc. The trends over the last 7 years as shown by these individual categories are quite interesting.

For example, in the next chart, the application of funds to air defense is shown to be rising slowly to about $90 million under the pressure of coping with faster aircraft and missiles.

Mr. POTTS. Admiral, may I also ask you at that point to furnish for the record the figures for those years that are on the chart?

Admiral BENNETT. I will do so for all the charts.

(The charts and data requested have been supplied to the committee in classified form.)

Mr. POTTS. All right, fine.

ANTISUBMARINE RESEARCH EXPENDITURES CONSTANT

Admiral BENNETT. The antisubmarine area, the next chart, is interesting because for years antisubmarine warfare held the highest priority.

Despite this priority the line is essentially level which seems odd at first glance. The reason is that new ideas replaced old ones in such time cycles that expenditures remained about constant.

(Senator Jackson entered the room.)

Admiral BENNETT. World War II provided a breakthrough in terms of scanning sonar. (D)

BALLISTIC MISSILE ACCESSORIES

The next item, "Sea combat," directly reflects the impact of the ballistic missile. The rising curve in 1956 and 1957 is due almost solely to accessories leading to the use of IRBM in ships.

Senator SYMINGTON. Admiral, I ask a couple of questions here for clarification.

Admiral BENNETT. Yes, sir.

Senator SYMINGTON. When you say the rise in the missile; is this your participation in Jupiter, or is it apart from that?

Admiral BENNETT. This is the part of the Jupiter program, Mr. Chairman, which applies to the ships, sea combat is the general area.

Senator SYMINGTON. And how do you pay for that?

Do you pass that over to the Army?

Admiral BENNETT. No, sir.

Senator SYMINGTON. The money?

Admiral BENNETT. No, sir.

Senator SYMINGTON. Or do you participate with the Army at Huntsville?

Admiral BENNETT. In this particular chart, Mr. Chairman, the Army is not involved at all. This is the accessory equipment, navigation equipment and computers and so forth that will go in the ships themselves.

Senator SYMINGTON. In other words, you have your own Jupiter program?

Admiral BENNETT. Yes, sir.

ARMY IS RESPONSIBLE FOR JUPITER MISSILE

Admiral LIBBY. May I clarify at this point, the seaborne portion of the Jupiter program is funded by the Navy and being carried out by the Navy.

The Army is responsible for the missile itself, and for the guidance system with an assist by the Navy in that area.

Anything that relates to putting this weapon in a surface ship or a submarine is a Navy responsibility.

PROPELLANTS

Senator JACKSON. You are spending some money on propellants though, aren't you, on solid propellants?

Admiral LIBBY. We have a solid propellant, yes, sir, as distinct from the Army's liquid propellant program.

I forgot to mention that. That is the Navy's responsibility.

Senator JACKSON. That involves primarily the platform that has to be built together with all the supporting equipment that will make feasible the delivery of such a weapon from a surface or a subsurface ship.

Admiral LIBBY. That is essentially correct; yes, sir.

It is the platform, the precision navigation equipment for the ship itself, and related things.

Senator JACKSON. That is a little problem.

Admiral LIBBY. Yes, sir.

Senator SYMINGTON. Senator Duff?

Senator DUFF. No, sir.

Senator SYMINGTON. Proceed, Admiral.

OTHER AREAS OF EXPENDITURES

Admiral BENNETT. The next chart shows the trend in supporting research and development. This category reflects a considerable increase in the last few years particularly in fields in support of aircraft in general, such as the development of jet engines and synthetic fuels.

Other fields in this category receiving considerable attention are both aeronautical and shipborne electronics.

Lastly is basic research. Here again we have an area where ideas are of the utmost significance. The input of new ideas is relatively stable.

Since the conduct of research in general is a direct responsibility of my office, a few interesting items might be of interest to the committee.

NAVY LEADS IN UPPER AIR RESEARCH

The Navy leads in upper air research. The constant level meteorological balloon program mentioned in the press recently is an example. The very successful Viking rocket program of the Naval Research Laboratory is the reason the Navy was chosen to provide the earth satellite.

In metallurgy, the use of titanium was expedited because of Navy research. The push of 2,000° metals continues through Navy work specially in the molybdenum alloys.

Senator SYMINGTON. For clarification, are you talking centigrade?
Admiral BENNETT. Yes, sir.
Senator SYMINGTON. What would that be in Fahrenheit?
Admiral BENNET. I am sorry, sir, this would be 2,000° F.
Senator SYMINGTON. What do you mean by degrees?
Steel melts at around 2,800° F.
Admiral BENNETT. The materials we are currently using, sir; I believe are only good to about 1,600°.
Senator SYMINGTON. Then you are not talking about a melting point?
Admiral BENNETT. No, sir; about use in engines.
Senator SYMINGTON. Thank you.

VERTICAL TAKEOFF AIRCRAFT

Admiral BENNETT. In unconventional aircraft we have pioneered. The Convair VTO aircraft was the first fixed-wing plane to take off and land vertically.
This was a Bureau of Aeronautics project.

TILTABLE PROPELLER AIRCRAFT

On the other hand the Office of Naval Research had the foresight to sponsor the tiltable propeller aircraft.
The Air Force has now ordered a heavy test bed of this type of aircraft.

OTHER DEVELOPMENTS

Present programs call for exploiting the Hiller flying platform with orders for the Army and Marine Corps for service test, and for advanced work in the ducted fan area, such as the Lippisch Aerodyne.
In a more mundane way an investigation of crystalline structure of matter led to diamond tools that last up to 40 percent longer.
A very interesting program is that for simplified and standardized cockpit instrumentation. The heart of this is the flat plate TV-type tube, an ONR-sponsored development. The Canadians have joined us in this effort. The British have indicated they will join.
The capsule concept puts a standard cockpit system and the major part of the "brains", that is, electronics, into a break-away aircraft section. In case of accident the pilot is ejected in the capsule which is ultimately parachuted down. The capsule even serves as a boat in case of a water landing. Thus the pilot and most expensive equipment may be saved.
Finally, it might be mentioned that we have the SAGE system in its present state of readiness because the ONR Whirlwind advanced scientific computer was available to MIT—Lincoln Laboratory at the start of the project.

NAVY THINKS HIGHLY OF ITS R. AND D. PROGRAM

The next chart illustrates the areas of emphasis in the Navy's R. and D. program a little more clearly. The top trend line indicates the increasing emphasis on R. and D. in the last 3 or 4 years while the lower lines show that the bulk of this increase has been applied

to the fields of aircraft, guided missiles, and most recently ballistic missiles.

You understand of course that this chart, notwithstanding a great deal of the R. and D. included under guided missiles, also provided the support for ballistic-missile work in previous years.

The final chart ties the figures used in with the fiscal year 1957 budget as it now appears before the Congress.

The left hand bars are for fiscal year 1956. The right hand ones for fiscal year 1957. The subdivisions, from left to right, are Aircraft, Guided Missiles, Ships and so forth, small craft, artillery and weapons, other equipment and military sciences.

In closing, I would like to make one comment as the officer charged with the responsibility for the technical coordination of R. and D. in the Navy. The Navy's R. and D. program is big. It is complex. It covers almost every known scientific and technical field from astrophysics to metallurgy to boiler turbines.

In spite of its size and complexity, it is highly responsive to change and breakthroughs. And what is most important of all it has been and will continue to be highly productive of new ideas, equipment, and weapons.

I do not mean to imply that the program has reached a point where no improvements can be made but I do mean to imply most emphatically that for an effort of its size and complexity, the Navy's R. and D. program is fulfilling its mission.

(Senator Jackson left the hearing room.)

Admiral Bennett. The next witness will be Rear Admiral Morgan.

TESTIMONY OF REAR ADM. A. M. MORGAN, ASSISTANT CHIEF, BUREAU OF SHIPS, FOR SHIP DESIGN AND RESEARCH, USN

Admiral Morgan. Mr. Chairman, I am Rear Adm. Armand M. Morgan, Assistant Chief of the Bureau of Ships for Ship Design and Research.

The Bureau of Ships is responsible for the design, construction, and maintenance of the ships of the Navy.

Research and development program is therefore directed toward the improvement and development of those ships, their installations, mechanism, and materials.

BUREAU OF SHIPS ACTIVITIES

As mentioned by Admiral Libby, our effort is spread across several categories of naval warfare. The principal ones in which the Bureau of Ships' efforts are applied are antisubmarine warfare, submarine warfare, sea combat, air defense, and supporting research. A small part of our effort is applied to eight other warfare categories.

In antisubmarine warfare, our work is largely in the development of improved sonar, improved communications systems, and in mine and torpedo countermeasures. (D)

In communications we are developing devices for the rapid transmission of information so necessary for effective submarine location, tracking, and attack. This involves greater volume of traffic handling, automation, transistorization, and freedom from noise interference.

Our mine and torpedo countermeasures work is particularly difficult because of the complexity of the mines and torpedoes to be countered. It is urgent, however, because the Russians have always been active and capable in mine warfare. We must be able to cope with magnetic, acoustic, and pressure mines, and with combinations of these types.

In submarine warfare our major effort is in the development of nuclear powerplants. We are working on liquid metal heat-transfer systems, similar to that of the *Sea Wolf* (SSN–575), in order to obtain improved performance and materials, and to determine the limits of feasibility.

We are working on a number of submarine high pressure water nuclear powerplants, a plant for smaller nuclear submarines, a plant for an antisubmarine, a plant for the radar picket submarine, and an improved plant for a fast single-screw submarine exploiting the hull form and principles developed on the *Albacore*.

To develop these powerplants, much work is necessary on coolants, components such as pumps, valves, instruments and controls, etc., as well as on optimum shielding, control of the atmosphere within the submarine and the hull structure of the submarine.

Much of the results of this effort will be used in current designs of submarines carrying guided missiles and in designs currently being prepared for submarines which will be able to carry and fire the IRBM from any place on the high seas.

Under sea combat are grouped our efforts in surface operations, such as maneuvering and stability of ships, special structural studies, improvements in conventional types of propulsion plants, and improved antenna systems.

Stability efforts include the development of activated fins and surge tanks both of which systems reduce rolling and, to some extent, pitching. This is of great importance to ships carrying guided or other missiles.

We are improving boilers which will operate at high pressure and will be gas turbine supercharged. They will result in a considerable reduction in size and weight over present boilers.

In the nuclear field, we are developing for the nuclear aircraft carrier, a powerplant consisting of eight nuclear reactors. Ⓓ We are also developing for the nuclear powered guided-missile cruiser currently being designed, a modification of this powerplant. Ⓓ

In air defense, our efforts are to obtain improved radar detection and more rapid combat data handling.

In radar, we are developing improved general search and intercept radars for the early detection of enemy aircraft and continuous control of our own. The increased speed of aircraft presses for improved radars. Ⓓ

One application of the radars produced will be on the early warning ships which extend the DEW line beyond the areas which can be reached from the shore.

In combat data handling, we are developing equipments to take the place of the World War II combat information centers which utilized hand plotting and voice commands.

The new systems will provide automatic or semiautomatic coordination of air, surface, and subsurface operations for both offensive and defensive operations of individual ships and groups of ships.

The air defense data transmission equipment will provide extremely rapid, reliable, and accurate transmission and reception of air-defense information between units of the fleet and from the fleet to shore installations.

In this connection, by cooperative effort with the Air Force our data will be in a form compatible with and fully usable in the continental defense by the SAGE project.

Our radar indicators and displays will be almost fully automatic and will permit selective display of those aircraft or targets desired. They will eliminate the present time-consuming methods of individual plotting and voice communication to the display board.

The last major category mentioned was supporting research. The work in this category supports the work of the other categories. Some of the fields are:

Fundamental hydromechanics research which yields new ship forms such as *Albacore*. It enables us to increase the speed of ships and to improve their seaworthiness, control, and other qualities. Structural studies permit the use of lighter structures or obtaining stronger structures.

We have been able to greatly increase the operating depth of submarines and permit the operation of heavier aircraft from carriers.

In ship machinery we are developing a free piston gas generator turbine plant suitable for small ships, increased voltage electrical systems to reduce the weight of electrical components, more powerful storage batteries of the primary cell and silver zinc types, etc.

As the technology of warfare becomes more complex, the field of oceanography becomes of considerable importance and demands our attention for applications in amphibious warfare, precision navigation for launching missiles and operating submarines submerged for long period of time, and for Arctic operations.

Finally, I would like to mention the work of the Bureau's naval radiological defense laboratory. At this laboratory, and in collaboration with and with the support of the Army and Air Force, work of vast importance in the effects of atomic warfare is accomplished.

Data are developed regarding thermal and nuclear radiation, the blast effects of these weapons, and the biological implications.

Instrumentation is developed and means of defense and decontamination sought.

The next speaker will be Rear Adm. Schoech of the Bureau of Aeronautics.

TESTIMONY OF REAR ADM. W. A. SCHOECH, ASSISTANT CHIEF OF THE BUREAU OF AERONAUTICS FOR RESEARCH AND DEVELOPMENT, UNITED STATES NAVY

Admiral SCHOECH. Mr. Chairman, I am Rear Adm. W. A. Schoech, Assistant Chief of the Bureau of Aeronautics for Research and Development. My group in the Bureau of Aeronautics is responsible for formulating and prosecuting programs to plan, develop, and support the Navy's air arm.

Admiral Combs has presented to you the present and near-future operational capabilities of naval aviation.

BUREAU OF AERONAUTICS DEVELOPMENTS

I will now briefly describe the developments underway in the Bureau of Aeronautics to obtain improved naval air weapons, in order to insure the retention of modern air-combat capabilities in the fleets.

In the field of antisubmarine warfare we are exploring every known method and theory for detection and destruction of the modern submarine. As platforms for dunking sonar, constant effort is being applied to provide improved helicopters and seaplanes. For the helicopter we seek improved hovering characteristics, greater load-carrying ability and better all-weather capabilities. For the seaplanes, we seek the capability of operating from very rough seas.

Aircraft with these characteristics can exploit dipped sonar to the fullest. (D)

The Navy is also continuing to exploit the capabilities of the airship which can provide submarine detection capabilities for long periods of time in a given area. It is therefore useful for continental defense and convoy escort tasks. (D)

In the aircraft powerplant field, efforts are being accelerated to improve the air breathing turbojet engine. Emphasis is on lighter weights, higher-speed capability and reduced fuel consumption. (D)

However, the inherent limitations of this type engine, as regards altitude, make it necessary that we exploit other avenues to attain required performance improvements for the near future.

Other approaches will enable us to achieve the very high speeds which can be reached only in the upper regions of the atmosphere where air breathing engines are inoperable.

This we are doing in our rocket-engine program. (D)

In nuclear powerplants we are advancing as rapidly as technology will permit. Almost unlimited range appears possible with nuclear power. The main problem, as is well known, is the heavy shielding required to protect adequately the crew from the nuclear radiation for the flight duration. Naturally the higher the reactor power used during the flight the greater the crew dose. (D)

(Senator Jackson reentered the hearing room.)

Admiral SCHOECH. Future developments and breakthroughs we hope in the nuclear reactor powerplant and shielding fields will no doubt permit rapid advances in the attainable performance of nuclear-powered aircraft. (D)

Due acknowledgment is here paid to the program sponsored by the Air Force in prior years starting about 1947 which has been of inestimable value to us in our program.

Extensive effort and emphasis is also being placed on the development of more efficient fuels. (D)

Expansion of production capacity for this program has begun, and it will give us the necessary quantities for the postdevelopmental testing required in experimental-engine programs.

In modern aircraft design one of our major problems is keeping pilots and crew reasonably safe and efficient.

All of our modern fighter and attack aircraft and most other types have pressurized cockpits. In addition, in our very high altitude aircraft, such as the F4D and F8U, it is necessary to equip pilots with pressure suits to protect them from the almost instantaneous severe effects of rapid decompression if cockpit pressurization is lost. Large

amounts of cockpit cooling are required to overcome the effects of aerodynamic heating which results from very high speed flight. Ejection seats now enable pilots to abandon their aircraft in emergencies.

For the next generation of very high speed aircraft, capsules will be needed, as mentioned by Admiral Bennett, to enclose the pilot for protection from severe wind blast and deceleration forces.

With higher and higher aircraft performance comes the need for greatly improved navigations systems. (D)

Increased air intercept detection ranges are urgently needed to keep pace with the rapid advances in fighter and bomber high-speed performance. Developments are now under way to develop fighter aircraft radar with increased performance by utilizing larger antennas, higher power, and improved circuitry.

A further improvement in the ability to attack head-on targets can be obtained if the delay time between first detection of the target and lock-on of the radar to start tracking the target can be reduced. Techniques to accomplish automatic lock-on with a short time lag are being pursued actively. Another area subject to needed improvement is the low altitude attack capability. The future fighter radar must be able to detect and track targets flying close to the surface of the earth. Much engineering attention is being devoted to this problem. (D)

The airborne early warning aircraft are a vital part of the air-defense system, providing much earlier raid detection than ship- or land-based radar. This is particularly important for detection of very low flying attacking aircraft. For carrier-based early-warning aircraft, which are quite limited in size, developments to improve the radar are focused on advanced electronic designs. (D)

For the land-based early-warning aircraft larger antenna sizes and advanced electronics are being combined. (D)

Naval aircraft must operate from the special environment of the very restricted spaces of carriers' decks and from open-water areas. There are several programs for developing new and improved equipment to permit launching and recovering the high-performance aircraft and missiles of the future from carriers and from restricted landing strips near beachheads.

Also under development is equipment to refuel and support seaplanes in advanced ocean areas.

High-pressure steam from the new carriers and separate high-pressure gas generating plants will provide the power for advanced types of catapults. (D)

Likewise, programs are underway to develop high capacity arresting gear to arrest aircraft. (D)

Mobile expeditionary types of catapult and arresting-gear systems are being developed to permit the Marine Corps to operate conventional types of high performance fighters and ground-support aircraft from small landing strips at advanced bases.

Studies and developments are underway to provide submarines with the refueling and handling equipment necessary to support operations of limited numbers of seaplanes close to enemy shores.

Similar equipment is being developed so that surface-ship tenders can support larger groups of seaplanes from points at sea beyond the range of enemy heavy air attack.

In the guided-missiles field, possibly the most important technical development area is that of guidance and effort is proceeding at an accelerated pace to develop new guidance techniques suitable for next generation missiles.

For the air-to-air missiles, work is being done on new radar guidance techniques which promise significant increases in the range at which homing missiles can detect and track the target aircraft. (D)

For air-to-surface missiles, the object is to increase effective guidance range beyond that of enemy ground-based defense equipment. Here the guidance problem is even more acute than for air-to-air missiles inasmuch as land targets do not offer the very distinctive radar returns as do aircraft. (D)

(Senator Jackson left the hearing room.)

Admiral SCHOECH. The objective for surface-to-surface missiles is to increase the range at which the warhead can be delivered with the required accuracy at the target. (D)

Most of the air-launched guided missile and other major items of equipment I have just discussed require more time to develop than do the airplanes which carry them.

The aircraft that are being designed this year and next will utilize engines, armament, radar, and other equipment whose development started from 1 to 5 years ago.

Likewise equipment which starts development this year will comprise the essential components of aircraft to be designed 2 to 8 years from now.

For this reason we must at all times have a reasonably accurate picture of where we are going for the next 10 years. To arrive at the picture we first consider "where can we go?"

STATE OF THE ART

I have here two charts that are our predictions of what the state of the art will be between now and 1970 in the way of maximum speeds and altitudes of unmanned aircraft (guided missiles), manned research aircraft and manned service aircraft.

In connection with what you said a while ago, Mr. Chairman, the estimated gross national product, if plotted against approximately the same general coordinates, will be approximately parallel to these curves.

FUTURE AIRCRAFT SPEEDS

On chart 1, the lower line, that is this chart here [indicating], outlining the hatched area, indicates the feasible speeds which we believe the state of the art will make possible for service aircraft. (D)

Mr. POTTS. Admiral Schoech, may I ask that you furnish the figures on this chart at this point in the record?

Admiral SCHOECH. I will, sir.

Mr. POTTS. So that the chart in effect will be described in detail.

Admiral SCHOECH. I will.

(The figures requested have been supplied to the subcommittee in classified form.)

The line above indicates speeds of research aircraft, which will lead service aircraft by about 5 years. (D)

Senator SYMINGTON. When you get up to those altitudes with a rocket, it all gets a little involved from the standpoint of concept of speed on the ground, isn't that right?

Admiral SCHOECH. That is right, sir.

FUTURE AIRCRAFT ALTITUDES

This next chart will show altitude. This shows feasible altitudes. (D)

That is its combat ceiling at which its rate of climb is reduced to 500 feet per minute. It is, of course, impossible to say with certainty that we will need, or want, the ultimate in speeds and altitudes that the state of the art will allow for manned aircraft.

We have to consider the growing capability of guided missiles.

In fact, for the most types of aircraft, including transports, trainers, and antisubmarine warfare aircraft and close air support aircraft, we will not want to fly "high and fast."

However, for others such as fighters, attack aircraft, and guided missiles, we may want all the speed and altitude possible.

Therefore we are developing the materials, engines, and other equipments required.

AIRCRAFT IN DEVELOPMENT

In the field of fighters our highest performance model now flying is the F8U–1, which expected to be operating in the fleet soon. (D)

Following these we plan to proceed with the vertical or short take-off and landing aircraft as rapidly as engine and other developments will permit. (D)

Large seaplanes used alternately for mining, antisubmarine warfare, and other missions will progressively change from chemical engines to nuclear power.

Mr. POTTS. Admiral, will you furnish a description of this chart also for the record?

Admiral SCHOECH. I will, sir.

(The information requested has been supplied to the committee in classified form.)

Our most advanced seaplane now flying is the P6M. Following this is a nuclear powered seaplane development, with an extensive combat radius, which is not anticipated for some years. (D)

Active work is being prosecuted for the development of supersonic systems. For amphibious operations we will continue to develop more efficient and moderately higher performance helicopters, land planes and seaplanes for use as assault transports.

This presentation has been prepared to give you a broad picture of the Research and Development program of the Bureau of Aeronautics, the goal of which is to provide the fleet with the best aircraft weapon systems possible. We believe we shall continue to achieve that goal.

Captain Hooper, who is the Assistant Chief of the Bureau of Ordnance, is the next speaker.

TESTIMONY OF CAPT. E. B. HOOPER, ASSISTANT CHIEF OF BUREAU FOR RESEARCH, UNITED STATES NAVY

Captain HOOPER. Mr. Chairman, as a unit of the Navy's Research and Development team, it is the function of the Bureau of Ordnance to develop weapons and associated parts of weapons systems which are needed by the Navy to fulfill its many tasks.

BUREAU OF ORDNANCE ROLE IN WEAPONS DEVELOPMENT

As stated by Admiral Libby, a program of great variety and very wide scope is required to meet these needs. Weapons must be developed to be launched from submarines and from surface ships as well as from aircraft, and these weapons must be capable of destroying targets under the water, on the surface, and in the air.

In fulfillment of the operational requirements placed upon us by the Chief of Naval Operations, our greatest areas of effort these days are in air defense, antisubmarine warfare, and the Intermediate Range Ballistic Missile System.

The last of these the Jupiter Ballistic Missile System is being handled separate from the other programs of the Bureau. As you were told by Admiral Clark, the project for its development is a joint effort on the part of the Army and the Navy. The organization to carry out the Navy's portion is a separate entity, attached to and receiving support from the Bureau of Ordnance.

To give you an idea of the sort of work we are doing in the remainder of our research and development programs, I shall mention briefly a few of the more notable recent achievements. (D)

AIR-DEFENSE MISSILES

For our surface ships we are developing three air defense missiles systems, the Terrier, the Talos, and the Tartar.

Terrier is the short range, rocket-powered guided missile in fleet use in U. S. S. *Boston*.

Talos is the larger guided missile, now in prototype stage. (D)

Tartar is the small Terrier-like guided missile under development for use primarily in small ships. (D)

I have given you a glimpse at some of the research and development tasks the Bureau of Ordnance has been accomplishing. As mentioned previously, our overall research and development program is an extensive one, involving, as well, a number of other weapons and and supporting programs.

OTHER ACTIVITIES

I have not mentioned, for instance, work in mines or rockets, in warheads or fuses, in propellants or ballistics, in explosives or effects, in hydrodynamics or propulsion, in launchers, or in weapon controls with their sophisticated devices, radars, and computers.

Discussion of the programs has been limited in the interest of brevity.

Now, Mr. Chairman, we have a 5-minute film which shows brief scenes of some of the weapons discussed and some others. (D)

(A movie was shown at the conclusion of the statement.)

PROJECT DEVELOPMENT

Captain HOOPER. Now, Mr. Chairman, counsel has asked that we outline two research and development programs.

Senator SYMINGTON. I think we had better get into questioning, so let's take one of those, the one you like best and run through it.

Then we will see how much time we have.

Captain HOOPER. Not much choice, sir. (D)

Mr. Chairman, there is probably no typical research and development project.

This is particularly true if the project in question is a radical step forward, rather than just an improved version of something which has been done before.

The two weapons which will be discussed have been selected because they are significant forward steps, they are air-launched, and they have recently become operational. Each has had its own peculiar problems, and many of these have been unique to the weapon program in question.

AIR-TO-AIR GUIDED MISSILE

The first program to be discussed is that of the air-to-air guided missile, which took 7 years from the time the idea was first conceived, until the weapon became operational. (D)

In June 1949, the naval ordnance test station formalized the concept of a guided rocket which was a result of the combining of ideas of those experienced in air-launched rockets, fire control, and other fields of ordnance. The study which led up to this idea and the early work done on its components was carried out under what is known as foundational research.

The Bureau of Ordnance initially conceived the idea of foundational research shortly after World War II, in order to stimulate original thought.

After further study and tests, the naval ordnance test station, in May 1951, informed the Bureau that the weapon was feasible.

A month later, the Bureau recommended approval of the development to the Office of the Chief of Naval Operations.

Obtaining approval was a complex process because of the implications of duplication with other prospective missiles.

The Research and Development Board and the Director of Guided Missiles of the Department of Defense, were involved in this process. Approval was obtained in November 1951.

Development was started in October 1950 under limited Bureau funds for components which might have application to other ordnance programs. Design work on the complete weapon started in December 1951.

Fabrication of the first prototypes was commenced in April 1952 and the first prototype missile was air-launched in July 1953.

Normally, technical evaluation, followed by operational evaluation, must be completed before approval is obtained for the initiation of production.

The promise of this weapon was so high that the go-ahead for production bypassed these steps. Production was initiated early in 1954. The first production weapon was received in April 1955.

Operational evaluation commenced this January and fleet utilization is scheduled to start in July. (D)

The other one is very short.

Senator SYMINGTON. This is very interesting. Inasmuch as it is short we would like to see it, I am sure. (D)

Capt. HOOPER. Although no approval of a formal project was soon forthcoming, approval at the Bureau, Chief of Naval Operations, and Department of Defense levels was obtained in February 1951 to include this item in the budget for the following fiscal year. (D)

General acceptance of the idea was apparent when the report of this study was published, and early in November 1951, the Bureau recommended the specific development to be undertaken, together with time and cost estimates.

This study speeded up later development by being very complete in engineering aspects and programing.

Consequently, the time schedule evolved was in fact later achieved. (D)

In April 1952, formal approval was received.

The development effort was organized, and full development started shortly thereafter. The schedule proposed and followed took calculated risks and thereby saved considerable time by bypassing some of the steps which are required in other programs. (D)

Prototypes started coming off pilot production lines in August 1953.

Production was initiated in July 1954.

After early evaluation tests, the weapon entered the stockpile in October 1955.

APPRECIATION

Senator SYMINGTON. Thank you very much.

Admiral Libby, those are splendid briefings, very clear and concise and informative. The Chair and the committee thank you for all the trouble you have gone to to get them up.

Admiral LIBBY. Thank you, sir.

Senator SYMINGTON. Mr. Counsel, have you any questions you would like to ask?

Mr. POTTS. Mr. Chairman, I have a few questions.

LAMPLIGHT AND KILLIAN REPORTS

Admiral Libby, yesterday we discussed the impact of the Killian committee report and its recommendations on the Navy's program, R. & D. programs in fiscal years 1955, 1956, and 1957. I wonder if you would describe for the committee what that report was and what effect it had on your programs in those fiscal years and the amounts of money that were programed for Killian items.

Admiral LIBBY. Yes, sir. I would like to go back a little bit and talk first about Lamplight because it became incorporated in the Killian starting point.

Senator SYMINGTON. Lamplight was a previous study that affected your action on Killian items?

Admiral LIBBY. Yes, sir, the Lamplight study project originated from the Navy's recognition of the technical problems arising out of

the extension of the DEW line, Navy's plans to employ naval forces in extending the continental air defense system seaward.

This study group was established in April 1954 and done by the Chief of Naval Research. It was a project inaugurated at MIT, with Professor Zacharias as the technical director.

That study was completed in February 1955, final report submitted in March 1955, and as a result of this study, the Navy immediately submitted emergency fund bids to implement the recommendations of this particular lamplight study.

Meanwhile in November of 1954, the fall of 1954 rather, the Technological Capabilities Panel, which was the Killian group, was established by the Science Advisory Committee to the President to carry out broad studies related to continental defense as a whole.

This report was submitted to the President by the Department of Defense in February of 1955.

Now the Navy was participating in this study and was au courant with what went on during this study.

One of the byproducts of the Killian group study was to approve the Lamplight report, so the two became pretty much meshed in the Navy's research and development program.

Mr. POTTS. Admiral, you did not give us the figure with respect to the extra funds requested as a result of Lamplight?

FUNDS

Admiral LIBBY. Well, I believe I have those figures here, $9,080,000. That was for fiscal year 1955 emergency funds.

If I may, I would like to recheck these figures for the record later.

I believe I have them correctly but when you get involved in this numbers racket you can get in a lot of difficulties unless you check them very carefully, so I would like to reserve the right to resubmit dollar figures, sir, because they are not too revealing or too accurate I am afraid.

Now the overall funds in the fiscal 1955 program for Lamplight—I can correct that figure now.

The Navy asked for $9,080,000 and received $8.47 million to initiate the Lamplight studies, so the fiscal 1955 figure is roughly $8½ million—$8,470,000.

Mr. POTTS. Where did those funds come from?

Admiral LIBBY. They came from the Secretary of Defense's emergency fund, according to the best information that I have.

In fiscal year 1956, to implement Killian and Lamplight combined, sir, we got a total of $114,102,000.

That is in the fiscal 1956 research and development budget. Fiscal 1957 we have asked for $94,010,000, Killian-Lamplight combined. Fiscal 1956 roughly $72 million was in the Navy in the initial submission of the Navy R. and D. program, $21½ million came out of the Department of Defense's emergency funds, $20½ million from other Department of Defense appropriations.

QUESTION OF DEEMPHASIS OF OTHER PROGRAMS

Mr. POTTS. Now in some readjustment within the Navy's research and development, original submission to the Chief of Naval Operations

was required to finance Killian-Lamplight, and some of the other projects were deemphasized?

Admiral LIBBY. There were none that I know of that were abandoned. I would have to go back over the whole program and check it explicitly, and I have not had time to do that since we discussed this yesterday.

If the committee wishes it, I will attempt to find the answer, but it is going to be a difficult process.

Mr. POTTS. Could you tell us some of the programs that were deemphasized or that were shoved back in time, that had to be slowed down?

Admiral LIBBY. That as I say, sir, I would have to go back into the history of the formulation of the 1956 budget to do that.

Offhand I am not able to do it.

Perhaps Admiral Bennett can.

Admiral BENNETT. I cannot speak to that direct point but it should be noted, in connection with Lamplight particularly, that a number of the Navy's planned projects were aligned with the results of the Lamplight study, so that this is an explanation of some of Admiral Libby's difficulties in finding the figures.

In other words, for a long time we had planned certain R. and D. items with the Continental Air Defense, Fleet Air Defense, and these of course have to be identified from within the regular budgets, the regular projects, and then added to them the extra items which resulted more directly from Lamplight and Killian.

NEW PROJECTS RESULTING FROM KILLIAN REPORT

Mr. POTTS. Can you tell us how many new projects had to be started as a result of the Killian committee recommendations?

Admiral LIBBY. In fiscal 1956, sir, there were 95 new ones and 71 already funded that made up the 1956 part of the Navy's R. and D. program directly identifiable with Lamplight-Killian.

Mr. POTTS. I see. Now could you tell us what proportion of the $114 million assigned to Killian items in fiscal 1956 would be assignable to the 95 new developments that you had initiated.

Admiral LIBBY. Approximately 35 percent.

Senator SYMINGTON. We have got to get a little explanation here. I can see the counsel has discussed this with the admiral but the committee is still a little bit in the dark.

What is the Killian report in brief?

THE KILLIAN REPORT

Admiral LIBBY. The Killian report, sir, was the Presidential study or a study directed by Presidential orders, made by the Technological Capabilities Panel of the Science Advisory Committee to the President to carry out studies relating to continental defense.

Senator SYMINGTON. And when was that request made of Dr. Killian?

Admiral LIBBY. That was established in the fall of 1954, sir, and they submitted their report in February of 1955.

Senator SYMINGTON. And how did the report affect you, as the counsel has been bringing out in the questioning.

Did it increase your desire to defend the country or increase the necessity for defending it or did it change the nature of your concept of the defense?

In other words, what did the Killian report do to stimulate anything with respect to the Navy?

KILLIAN REPORT EXPEDITED RESEARCH AND DEVELOPMENT IN CERTAIN FIELDS

Admiral LIBBY. It largely expedited our research and development program, sir, in certain specific fields. (D)

Senator SYMINGTON. Now why did it expedite that?

Admiral LIBBY. I was not here at the time, sir, and I will have to leave that up to Admiral Bennett.

He perhaps can answer specifically how and why it expedited.

Frankly I would assume that it merely placed increased emphasis on the problems and perhaps resulted in additional funds being expended in those fields.

That is the only answer I can give, sir.

Senator SYMINGTON. But what I want to know is this.

We go along, and then somebody makes us jump. What was in the Killian report that made us jump?

I imagine it made all the three services jump, didn't it, not just the Navy?

Admiral LIBBY. Yes, sir.

Senator SYMINGTON. What was the nature of the report that galvanized the picture; let's put it that way.

Admiral Bennett?

EMPHASIZED NEED FOR SPEEDING AIR DEFENSE

Admiral BENNETT. I think in the broadest general terms, Mr. Chairman, it changed the priority of projects.

In other words, it emphasized the need for more speed in the Air Defense area.

Senator SYMINGTON. We want to know so the other members of the committee can read it too.

You get the idea of the Killian report in a general way. Specifically did it establish in effect priorities in research and development?

Admiral BENNETT. Not directly, sir.

It brought out technically what was required, if I may use a rather loose phrase, in one publication, what was required for the defense of the United States in this area.

Senator SYMINGTON. I am asking in ignorance.

I am not trying to develop a point, just asking for information.

Admiral LIBBY. Mr. Chairman, it was an overall study of the continental defense problem in all its aspects. It indicated certain areas where the state of the art would permit more rapid progress.

Senator SYMINGTON. Would you want to rephrase that and say it indicated areas where there should be more rapid progress?

Admiral LIBBY. Should and could be, sir. Not only did it indicate areas in which additional strengthening was required, but it also was devoted in certain of its aspects largely to feasibility.

QUESTION OF PRIORITIES

Senator SYMINGTON. Again let me ask, did it give priority?

I have never read the report. To the best of my knowledge I have never seen it. Did it give a priority in the sense of saying where special dangers were, say, in our defense situation; and as a result, you established priorities against those special danger zones?

Admiral LIBBY. Not priorities in that sense, sir.

It pointed out areas of weakness in the continental defense.

Senator SYMINGTON. Specifically, for example, what?

Admiral LIBBY. Well, lack of early radar warning as an example, deficiencies in the radar warning field.

Admiral DAVIS. May I take a crack at that, Admiral?

Admiral LIBBY. Yes.

Admiral DAVIS. Mr. Chairman, each of the services had conducted extensive research in their fields of interest, the Navy particularly in underwater sound detection and in fleet air defense and similar activities.

The state of the art, as expressed by Admiral Libby, became apparent then, its capabilities became more apparent to establish a broad, all-embracing plan for national defense.

The Killian study came out with specific recommendations in this field embracing all the services and all their activities and a great deal in the industrial studies, too.

That was approved by the President and became a DOD policy.

A PLAN

Now you had at once for the first time a complete plan. (D)

That is where that came from. The authorization, the across-the-service and industry plan to tie it all together in all the services. It was given a very high priority and therefore we specialized in pushing the elements that the Navy had responsibility for.

Senator SYMINGTON. Let me say it back to you, to be sure we understand it.

Dr. Killian made a report in conjunction with his staff and advisers. That report went to the President. As a result of it, directives were issued through the Department of Defense to concentrate on those items brought up as weaknesses in the report, and the Navy concentrated on that part of the report which affected them; is that right?

Admiral DAVIS. The broad plan was given to the various services to——

Senator SYMINGTON. What do you mean the broad plan, whose plan?

Admiral DAVIS. Based on the Killian recommendations as to what was needed.

Senator SYMINGTON. Who put that out?

Admiral DAVIS. The Killian Board put it out for the President at his request.

Senator SYMINGTON. Yes——

Admiral DAVIS. And the President approved it.

Senator SYMINGTON. So the broad plan was the Killian plan?

Admiral DAVIS. Roughly speaking; yes, sir.

It received considerable modification in the study of its implementation by the services.

Senator SYMINGTON. So the implementation of the Department of Defense was just the implementation of the Killian plan?

Admiral DAVIS. Not in toto as is, but you take the elements——

Senator SYMINGTON. Well, with minor changes?

Admiral DAVIS. You have got to study the feasibility of producing practical nuts and bolts in order to achieve the broad recommendations. Technologically it was obviously feasible but getting all the equipment is a different picture. (D)

Senator SYMINGTON. So the Navy developed that part of the plan of the Killian recommendation that applied to their part of the defense picture; is that right?

Admiral DAVIS. I cannot answer that categorically, sir, it is not quite that fixed.

Admiral LIBBY. Basically I would say, Mr. Chairman, that is in the broad sense correct.

Senator SYMINGTON. Otherwise we would have to start over again.

Admiral LIBBY. The Killian report is a tremendously voluminous report, sir, and the services implemented their particular portion of the recommendations to the extent that they could, I would say.

FUNDS TO IMPLEMENT PLAN

Senator SYMINGTON. Now were you given any increased appropriations in order to handle the report, and if so, how much. What was the original figure, what was the increase, and what was the total?

Admiral LIBBY. We received in fiscal 1956, sir, $21½ million from the Department of Defense emergency funds and $20½ million from other Department of Defense appropriations.

Senator SYMINGTON. Where would be that other locker that you could get 20 additional million dollars out of?

Admiral LIBBY. That was other Department of Defense appropriations, sir. I am not able to state explicitly what they were.

Senator SYMINGTON. Does anybody know where they were?

Admiral LIBBY. We can find out and furnish it for the record.

Senator SYMINGTON. Would you do that and put it in the record?

Admiral LIBBY. Yes, sir.

(The requested information is as follows:)

TABLE I.—*Summary of funds released by transfer from emergency fund and release of reserve for implementation of Lamplight-Killian recommendations and for Vanguard, fiscal year 1956*

Source of funds	Vanguard	Jupiter	Other Lamplight-Killian	Total
Transfer authority from:				
Ships and facilities, Navy		$11,400,000	$3,600,000	$15,000,000
Aircraft and facilities, Navy		3,500,000		3,500,000
Ordnance and facilities, Navy		2,000,000		2,000,000
Subtotal		16,900,000	3,600,000	20,500,000
Emergency fund transfers	$15,500,000	850,000	5,368,000	21,718,000
Total transfers	15,500,000	17,750,000	8,968,000	42,218,000
Funds released from appropriation "Research and development, Navy" reserve			27,448,000	27,448,000
Total	15,500,000	17,750,000	36,416,000	69,666,000

NOTES.—Upon receipt and study of the Lamplight-Killian report, it was determined that a substantial portion of the Navy's existing 1956 research and development program was in direct support of the recommendations. Projects such as the naval applications of the intermediate range ballistic missile were of such magnitude that additional funding of the total cost was necessary. Additional funding was also needed for other Lamplight-Killian projects requiring major speedup in reaching their objectives. The total of the 1956 research and development funds applied to Killian-Lamplight, including Jupiter and Vanguard, was $114,296,000 which includes the $69,666,000 shown above from transfers and fund releases and $44,630,000 included in the original research and development budget. As a result of receiving these additional funds and the continuing study of the Lamplight-Killian reports, it was determined to be unnecessary and not desirable to deemphasize other projects in the basic Navy program in favor of emphasis on additional Lamplight-Killian recommendations.

The transfers from "other DOD appropriations" were from other Navy appropriations as shown in the table ($20,500,000).

The remaining $27,448,000 was obtained by release of Navy research and development funds held in reserve. The initial withholding of these funds from the fiscal year 1956 research and development funds had no discernible effect on any specific Lamplight-Killian projects. The rescission of these funds was handled by a pro rata application to the remainder of the Navy research and development program including the operation of research and development facilities. The principal effect of this action was a general slowdown in the conduct of projects of a lesser degree of importance.

Senator SYMINGTON. And that additional money was a supplementary appropriation as a result of the Killian report?

Admiral LIBBY. That is correct, sir.

SOME PROGRAMS DEEMPHASIZED

Senator SYMINGTON. And did you have to downgrade any other items that you thought were important in order to handle additional specifications incident to the Killian report?

Admiral LIBBY. As I already indicated, Mr. Chairman, there was a certain amount of rearrangement of the Navy's initial 1956 research and development budget.

In answer to your question, I would guess that some projects of lesser importance were deemphasized.

I would have to——

Senator SYMINGTON. You run the Department.

We would appreciate more than a guess on that. We have our problem here.

Admiral LIBBY. Yes, sir.

CONGRESSIONAL RESPONSIBILITY AND INFLUENCE

Senator SYMINGTON. Under the Constitution the Senate has the duty to appropriate money. Pretty soon we are going to decide whether or not we accept the recommendation to appropriate a great deal of money to Yugoslavia.

Some people think that is a good idea. Some do not.

Now what we want to do here is establish what the United States needs. That is one of the reasons we thought it would be advisable to have all witnesses sworn, so they have independence and can give their personal opinion.

We have had some tesimony that makes it apparent there have been some pretty heavy restrictions in research and development. If the Navy has had similar restrictions, we want you to be frank and say so because it is the only way the Congress can really get to know.

If you are running that Department, you must know whether you downgraded some projects in order to upgrade others, as a result of the Killian report.

Admiral LIBBY. I should say that I am certain that some were deemphasized. As to explicitly what they were, I will have to search the history of the formulation of the 1956 budget, and I will make every effort to furnish explicit information.

There was not time between yesterday and today to do it.

Therefore in this particular area as to what projects were deemphasized within the original Navy research and development budget submittal, frankly I do not know yet.

Senator SYMINGTON. I am as certain as one can be without being certain that there will be more research and development funds appropriated for the other services than would have been without these hearings.

Admiral LIBBY. Yes, sir.

LOSING IN QUANTITY MAKES QUALITY EMPHASIS ESSENTIAL

Senator SYMINGTON. And I also feel that if we are going to give up quantity as to the size of our Army and the size of our submarine fleet and the size of most of our Air Force, we should stay ahead in quality.

It is just that simple; and the only way you can be sure to stay ahead is to go ahead with what people who are experts in these fields think is necessary.

Admiral LIBBY. That is correct, sir.

Senator SYMINGTON. That is the purpose of this questioning.

Admiral LIBBY. We will furnish the information, sir.

Senator SYMINGTON. Senator Duff?

Senator DUFF. Yes, sir.

KILLIAN REPORT RECOMMENDED AREAS TO EMPHASIZE

I would like to ask you, sir, whether the Killian report pointed out certain important things that they thought were feasible as against other things that they did not think were so feasible.

Admiral LIBBY. As I recall the report, sir, it indicated—it did not go off into the wild blue yonder in any sense. They made certain recommendations, and they felt that the state of the art would permit largely the implementation of these recommendations.

As Admiral Davis had pointed out, when it came to the detailed study of the ways and means to implement it, certain approaches were found to be not the optimum approach

Senator DUFF. But what I was particularly anxious to know was whether or not the report pinpointed certain particular areas where

they recommended that there be more emphasis put on those particular areas as a result of their appraisal of the feasibility of accomplishment.

Admiral LIBBY. They broke down as I recall it, sir—I have not read it for 3 or 4 months—they broke down the study into a number of components, air defense and so on, and so forth, and in essence they recommended increased emphasis in practically all the areas that they considered.

Senator DUFF. And did all the areas that they recommended for emphasis get emphasized as a result of the report?

Admiral LIBBY. I believe they did, sir.

Admiral DAVIS. Some were already definitely at the top of our list, sir.

Admiral LIBBY. The Navy was already pursuing a number of the items in the report.

Senator DUFF. But the emphasis was put on the places that the report indicated it should be put; is that right?

Admiral LIBBY. Yes, sir.

Senator SYMINGTON. Is that all, Senator Duff?

Senator DUFF. Yes, sir.

FUNDS PERMITTED PARTIAL FOLLOWTHROUGH ON REPORT

Senator SYMINGTON. If I followed my good friend from Pennsylvania's thought, was there any downgrading done as a result of the recommendations of the Killian report.

They did not recommend any downgrading; did they?

Admiral LIBBY. Not that I know of, sir.

Senator SYMINGTON. And if you had not received the $42 million additional you would have been in trouble in handling the upgrading recommendations; would you not?

Admiral LIBBY. Yes, sir.

Senator SYMINGTON. Did the $42 million cover what you felt you needed in order to handle the recommendations in the Killian report, or would you rather have had more?

Admiral LIBBY. I don't believe it fully covered all that we would like to have done, but it gave a substantial impetus to all the programs, and all the programs under that were adequately covered with the funds available for fiscal 1956.

CALCULATED RISKS VERSUS "FLY-BEFORE-YOU-BUY" POLICY

Senator SYMINGTON. In that connection, I was particularly impressed with one thought in the briefing given by Captain Hooper. He said on this, that you took some calculated risks to get into production. (D)

Here it is:

Took calculated risks and thereby saved considerable time by bypassing some of the steps which are required in other programs.

One hears a lot about the "fly-before-you-buy" theory which to me is an excellent way to stay behind your possible adversary if you establish it as standard policy.

With the people that have the training you gentlemen have in a particular field, when you want to take a calculated risk on a bomb,

or a plane, I think it much to the interest of the Government that you be allowed to do so, so as to hurry the item in question into production, the way the world is today.

Admiral GRIFFIN. Mr. Chairman, we have come more and more to that philosophy.

Going back aways into the thirties and twenties, the rate of technological progress was such that we could go ahead and have an idea, develop it, prototype it, test it, make up our minds, and then go into production.

The rate of technological progress is such now that we cannot in most areas do that, and therefore we have changed our policies in recent years to permit the more rapid introduction into service, bypassing some of these steps which formerly had been taken.

CHANGE IN TIME FACTOR

Senator SYMINGTON. Admiral, maybe you do not go back as far as I do, but in World War I we had a problem of days before anybody could reach here. Based on the Jupiter briefing, we now have a problem of minutes, and actually, if one was close enough, the problem of seconds.

So you have an entirely different problem from the standpoint of combat readiness as against what you had when you had a long time for buildup, plus an entirely different requirement for defense.

That is a fair statement, isn't it?

Admiral GRIFFIN. The situation has significantly changed; yes.

OTHER PROBLEMS

Senator SYMINGTON. I have not seen any briefings on submarine development. As you know, that is one thing that worries me.

Nor have I seen anything about relative capacity of their naval planes against our naval planes.

PROTOTYPES VERSUS PRODUCTION

In briefings given us, the Air Force has consistently been comparing their prototypes against volume production of the possible enemy. That is the type and character of lulling oneself into false security that might someday be very, very dangerous

Admiral GRIFFIN. Yes; we are including a breakdown on our estimates of the Russian naval air power in one of the answers which we are providing for the record, as a part of Admiral Combs' testimony, sir.

COMPARATIVE SOVIET BUILDUP

Senator SYMINGTON. I am very glad you are doing that, Admiral, because from what we hear they are building quite a few naval planes, also.

Admiral GRIFFIN. Yes, sir.

Senator SYMINGTON. And we have already had information about their surface construction, submarine construction.

Admiral GRIFFIN. Yes, sir.

Senator SYMINGTON. For instance, they had the MIG–15, we the F–86. I cannot talk your numbers as well as those of the Air Force.

By the time the F–86 was souped up they had the MIG–17. By the time the F–100's came out, they had the Farmers, 50 last May photographed in 1 flight.

At that time we were comparing the F–104's to those Farmers. We had 2, and lost 1 in a crash.

Without going into further detail, the same thing apparently holds true in bomber analysis.

When I was in the Air Force we had to make up our mind to build either a jet bomber, or a turboprop bomber because we were refused enough money to build both. So we had a meeting and decided to go for the B–52 instead of the turboprop job.

Our friends across the water compromised by building both, and flying both in relatively heavy quantities; in other words, the Bear as well as the Bison.

Mr. COUNSEL. Have you any questions?

REALINEMENT OF RESEARCH AND DEVELOPMENT FUNDS

Mr. POTTS. Just a few more questions, Mr. Chairman.

Admiral Libby, directing your attention to the figures you gave for fiscal year 1956, I believe you gave a figure of just over 72 million as money included in the regular research and development program of the Navy, your regular budget.

Admiral LIBBY. That is right, sir.

Mr. POTTS. Did any part of that come from funds held in reserve by the Department of Defense?

Admiral LIBBY. Yes, sir; $27½ million roughly, $27,448,000.

Mr. POTTS. Were those funds originally programed against other projects?

Admiral LIBBY. Yes, sir; they were.

Mr. POTTS. Now, explicitly, whether they were projects in the Killian-Lamplight or not I still have not been able to nail down. Could you furnish for the record the projects?

Admiral LIBBY. Yes, sir; I shall furnish for the record on that.

Mr. POTTS. That this money was held against?

Admiral LIBBY. That is all part of the apportionment process, Mr. Potts. That goes on all the time, holding funds in reserve.

Mr. POTTS. Right. Now in the fiscal year 1957 budget for Lamplight items, I think you said that the amount requested of Congress was $94 million, just over $94 million?

Admiral LIBBY. It was $94,010,000. A later request has added $16 million to the request for Jupiter funds.

Mr. POTTS. Could you tell us what the Navy's original estimate was as to the amount of money that would be required to fund the Killian items for fiscal 1957?

Admiral LIBBY. The original estimate, the shotgun estimate which we made was something on the order of $126 million.

That was pared down and as it went to the Congress it was $110 million, including $16 million additional for Jupiter.

Mr. POTTS. I see. As a result of that paring down, did you have to drop out or defer any Killian items?

Admiral LIBBY. Admiral Bennett is the dollar man in research and development, sir. Perhaps he can answer it a little more explicitly.

Admiral BENNETT. I think we are in danger of some confusion, Mr. Chairman.

The $126 million figure resulted from an expedited approach to the problems of Lamplight, Killian, and so forth, so that while the operations people were assessing the value of various items in the Lamplight-Killian report as they applied to naval warfare, the working people in the Department were instructed to prepare an estimate covering the fastest approach to everything in the Killian-Lamplight report area pertaining to the Navy.

This was the $126 million.

Now when these two studies met historically, there were certain items in the $126 million area that you might say were discarded.

In one case in electronics I can remember distinctly they were essentially parallel approaches to the long-range radar search problem, so that some part at least of the $126 million, and I have no explicit figures, sir, were as a result of the two proceeding in parallel to a conclusion that some final sum as shows up in the budget of $92 million was what in fact the Chief of Naval Operations desired.

NEW DEVELOPMENTS STRESSED IN KILLIAN REPORT

Mr. POTTS. Now directing your attention, Admiral Libby, if I may, to the 95 new developments that you said were initiated as a result of the Killian Committee recommendations, could you tell us what some of the principal new developments were that were initiated?

Admiral LIBBY. If you wish, sir, I can furnish you a list of all 95 explicitly.

Would you like us to do that, sir?

Mr. POTTS. Fine, if you will furnish that list for the record.

Admiral LIBBY. I am not sure that it will be very meaningful. It is in somewhat technical terms but I will submit the list, sir.

Senator SYMINGTON. May I suggest any you think would not be meaningful because too technical, just leave them out. Give us just a sample of the type and character.

Admiral LIBBY. Yes, sir; we will do that. We will give you a representative sampling of what they comprise. They were in the fields that I previously mentioned, sir, AEW, nuclear propulsion, missiles.

(The requested information is as follows:)

The following are representative new projects initiated as a result of the Killian and Lamplight studies:

1. Radar field

(*a*) Development of high-power transmitter tubes (above 1 megawatt) for radar, with emphasis on airborne use.

(*b*) Development of improved height-finder radars for airborne use.

(*c*) Development of improved search radars for airborne use, based on new principles of operation.

(*d*) Development of tunable transmitter tubes to counter the jamming threat by use of wide tuning range.

2. Communication

(*a*) Adaptation of multichannel single side band method of communications for shipboard and aircraft use.

(*b*) Development of high speed anti-jam, anti-intercept communication system.

(*c*) Development of low-frequency communication system for ships and aircraft.

(*d*) Research and experimental development on several theories of forward scattertropospheric, ionospheric, and meteor trail.

3. Data processing field

(*a*) Development of electronic data system components and complementary data transmission system equipment.

(*b*) Integration of existing target designation systems with the electronic data system.

(*c*) Development of the naval tactical data system and complementary airborne data system with ship-to-ship, ship-to-air, and air-to-air, ship-to-shore data transmission links.

4. Electronic counter-countermeasures field

(*a*) Study and experimental evaluation of antijam communication techniques.

(*b*) Development of tunable radar tubes for use in airborne jammers.

(*c*) Research on methods to reduce countermeasures vulnerability of search and fire-control radars, missile guidance and fusing systems, and airborne intercept radars.

5. Aircraft field

(*a*) Development of a nuclear powered seaplane system.

(*b*) Development of a prototype thrust augmentation rocket engine to provide altitude and speed advantage to interceptor aircraft.

(*c*) Development of turbojet engine for use of high energy fuel, with primary objective of increasing range of aircraft.

6. Guided missile field

(*a*) Development of an intermediate range ballistic missile system for shipboard use.[1]

(*b*) Development of the Triton surface-to-surface guided missile system.

(*c*) Improvement in high altitude and jump-up capabilities of air-to-air guided missiles presently under development.

(*d*) Improvement in the range capability of the Talos surface to-air guided missile system.

(*e*) Development of a surface-to-air guided missile system with low altitude capability and anti-air-to surface missile capability.

(*f*) Development of nuclear warheads for air defense missiles.

(*g*) Improvement of the low altitude capability of air-to-air guided missiles and their associated airborne intercept radars.

7. Sea surveillance field

(*a*) Study of parameters of a sea surveillance system to determine the kinds and volume of inputs, the output information required, and computing techniques available to accomplish this.

(*b*) Conduction of oceanographic surveys with respect to underwater electromagnetic phenomena, and acoustic conditions.

(*c*) Development of passive and active long range, acoustic detectors.

(*d*) Development of very low frequency ground-wave radar.

(*e*) Study of the feasibility of the use of small-deep-anchored sonobuoys for antisubmarine warning barriers in deep water.

Senator SYMINGTON. Let me ask a question here.

ANTI-BALLISTIC MISSILE

We have had some briefings on the anti-ballistic missile.

Whoever is the expert here on that particular subject, isn't that a rather tricky development?

Admiral LOBBY. Well, it is quite a problem, sir.

I am no expert in the field but I imagine Admiral Clark would be able to give you the best rundown on that, sir.

It is a terrific problem of course.

Senator SYMINGTON. If you base your thinking on the premise you can stop those missiles, is it not bound to affect your concentration

[1] This is being implemented in the joint Army-Navy ballistic missile program (Jupiter). The Army is developing the missile, ground launching, and guidance system. The Navy is developing the additional components necessary to adapt these to shipboard launching, including precision navigation, and the solid propellant programs.

on more practical problems that are possible in that same length of time.

Admiral Bennett, would you comment on that?

Admiral BENNETT. Well, I am no missile expert, Mr. Chairman, but I would like to comment on that.

The first problem to be solved of course is the detection of the missile at an early point in its trajectory.

Technically speaking, this gets us into the field of electronics.

Senator SYMINGTON. Right.

Admiral BENNETT. And in theory, which has not yet been proven in practice by any means, this is technically possible.

Now if one assumes that by some means or other we were able to detect this ICBM early in its flight, then, even at the speeds achieved, this would give us a certain amount of time in which to deliver a counterweapon.

Now generally speaking, and perhaps Captain Hooper could answer a little more explicitly on the missile itself, I do not believe it is without the realm of possibility to have such a missile, given warning of some respectable proportion of the flight time.

Captain HOOPER. I would concur in that, but I would like to qualify it just a little bit.

I think that if we are in the field of research and development and we don't accept the possibility of tasks such as this, perhaps we don't deserve to be in this field.

I think it is possible there may be a solution to this possible at some time.

Senator SYMINGTON. The admiral put his finger on it when he talked about it being an electronics problem. If you work in the speed of light you can do just about anything; but when you try to support your computations with cams and gears, then you get into a serious problem, if you have only a few seconds. Isn't that about it?

Admiral BENNETT. That is right.

Admiral LIBBY. Sir, I would like to make a remark that I certainly agree with Admiral Bennett and with Captain Hooper that there is nothing about the problem per se that broadly makes it impossible of solution, if you can get your warning, get your information by electronics means that the missile has been launched. (D)

Senator SYMINGTON. When you have a Mach of 25 though, you have an involved problem.

Admiral LIBBY. That is right. Yes, sir; you have indeed. (D)

Senator SYMINGTON. In theory you could have ECM stuff in the missile. So one could go on and on, attack against defense.

Admiral LIBBY. I think, sir, that we must not postulate that the problem is impossible of solution.

Senator SYMINGTON. I did not say that. We had a gentleman up here. It was very interesting. He gave us a fine briefing, but it sounded pretty theoretical.

Admiral LIBBY. It is not an easy problem.

Senator SYMINGTON. It is a tremendously important point in our whole defense structure. (D)

JET ENGINES

Mr. POTTS. Admiral Libby, turning now to a technical question, Admiral Schoech just discussed our jet-engine development and I wonder if you could tell us what the maximum thrust is of the jet engine, of any jet engine we have under development by the Navy?

Admiral LIBBY. I would have to ask Admiral Schoech to give you that information, sir.

Admiral SCHOECH. First let me say, Mr. Counsel, that our coordination and cooperation with the Air Force is such that we use their engines and they use ours.

I will now indicate in classified form the thrust of our existing engines and the anticipated thrust of those under study and those in development. (D)

NO CAUSE FOR COMPLACENCY IN RADAR FIELD

Mr. POTTS. Admiral, Admiral Bennett discussed certain research developments in what might be called difficult fields. I wonder if you could compare for us the Soviet developments in a couple of those; for instance, in the air-to-surface missile field and in the ship-based radar field.

Admiral BENNETT. Mr. Counsel, I am not knowledgeable in the Soviet missile developments. I would defer to someone who has knowledge of the intelligence in that area. (D)

In the Soviet radar field the information available to us gives no cause for complacency. (D)

SOVIETS HAVE R. AND D. CAPABILITY COMPARABLE TO OURS

Mr. POTTS. Admiral, would you say they have a capability in the research and development field that is roughly comparable to ours to develop modern scientific weapons?

Admiral BENNETT. The general and specific answer to that would be that they have definitely a comparable capability.

Mr. POTTS. That is all I have, sir.

Senator SYMINGTON. Senator Duff?

Senator DUFF. No more questions.

SOVIETS HAVE 430 SUBMARINES AND ARE BUILDING MORE AT RAPID RATE

Senator SYMINGTON. One further line of questioning I would like to develop before we adjourn.

It is now established that the Communists have about 430 submarines. I believe we were given that figure.

Admiral Griffin, could you answer that, sir?

Admiral GRIFFIN. That was the figure that was given to you; yes, sir.

Senator SYMINGTON. And how about January 1, 1958, what is the estimate?

Admiral GRIFFIN. I would have to check that figure, sir. However, they are continuing to build them at a very rapid rate. (D)

SUBMARINE AS OFFENSIVE WEAPON

Senator SYMINGTON. Again I want to ask, is there any danger the Navy is not doing enough to control those submarines because they are still considered a defensive weapon, not an offensive weapon, possible offensive weapon, especially from the standpoint of surfacing far out and launching missiles.

We hear a lot about the DEW line, and the importance of air defense.

Suppose they have 1,000 submarines, and decide to place 500 submarines a thousand miles off the coast, and at a certain time launch 500 missiles simultaneously from those submarines.

I forget how much of our population is within 25 miles of the coast, but it is plenty, far greater than one would think offhand, because it takes in so many major cities.

On that basis the submarine would be 100 percent an offensive weapon, not a defensive weapon.

Do you feel those possibilities are being recognized by your research and development?

Admiral LIBBY. Very definitely, sir.

We fully recognize them. We have the capability already, as you know of launching a missile from a submarine.

We see no reason to believe our prospective enemy does not have the same capability.

Senator SYMINGTON. We received a briefing on the Regulus I; I just meant whether you think we are doing enough defensively? (D)

Admiral LIBBY. We are doing as much as we know how to do, sir.

ANTISUBMARINE WARFARE FUNDS

Senator SYMINGTON. How much money in research and development did you get last year?

Admiral LIBBY. Something like $400 million.

It was on the chart.

Senator SYMINGTON. Please furnish that figure for the record. What percent of that do you think you could honestly say is being utilized to handle the problem I just mentioned, percent of the total amount of money you are getting?

Admiral BENNETT. I would have to extract that percentage, sir. All I can say to that point is we carry forward the projects that show promise of solving the problem.

Senator SYMINGTON. Of course, to be fair, any air research and development is fundamentally a development to handle that problem, isn't it?

Admiral BENNETT. That is right.

The chart which we showed covers the antisubmarine category, which Admiral Libby described, and this would include the money directly attributable to the aircraft end of the problem.

Admiral GRIFFIN. We have attempted, Mr. Chairman, in this general area of questioning in our past briefings to bring out the fact that many, many parts of the Navy are applicable in this area, sir.

For example, the carrier task forces provide the spearhead in the offensive aspects of ASW.

They combined with our submarines and later on our high performance seaplanes will do a lot in the attack part of this particular problem.

But the problem of ASW cannot be taken into one small compartment. It is spread throughout the entire Navy, sir, in its offensive aspects and its defensive aspects.

We are emphasizing very strongly the offensive aspects, and in the research and development area we are emphasizing very strongly the defensive aspects which are largely passive, for example, increased sonar ranges, sonobuoys, and all those other things which have been brought before the committee, sir.

Senator SYMINGTON. These briefings have been most constructive and interesting, and I know that the Congress, the Senate, the full committee, and ourselves now know a lot more about the Navy and its plans. We are very grateful to you.

I have one thing that still worries me; but am keeping an open mind, not with any effort. Maybe we can get together sometime with you and Admiral Russell and talk about it some more.

IMPORTANCE OF CONTROL OF SEA

The rest of it I think you are just as sound as a dollar on, and I hope that you get whatever is necessary to give us, not a superior Navy but a supreme Navy, because if we lose control of the sea we are going to lose control of the free world.

One goes with the other.

I did not mean to interrupt you.

Admiral GRIFFIN. I was just going to say, sir, we are certainly not complacent about this.

It is a tremendous problem which we face. We are recognizing it, and we are applying our efforts to it in the best manner in which we can.

APPRECIATION

Senator SYMINGTON. I for one am very proud of what you all have presented, and I know Senator Duff will join me in that comment.

Senator DUFF. Without question.

Senator SYMINGTON. Thank you all.

The committee is now adjourned.

(Whereupon, at 12:30 p. m., the subcommittee was adjourned, to reconvene at 2 p. m., Thursday, June 14, 1956.)

×